

EASTSIDE STORY: THE PERCEIVED IMPACT OF
THE CANTERBURY EARTHQUAKES ON
TEACHER PERFORMANCE

A thesis submitted in fulfilment of the requirements for the
Degree of Master of Arts in Education

Alexandra McDonald

University of Canterbury

2014

ABSTRACT

It is reported that natural disasters such as earthquakes impact significantly upon survivors' psychological wellbeing. Little is known however about the impact of disasters upon the professional performance of survivor employees such as teachers. Using a survey research design with an emphasis upon a qualitative data collection, 39 teachers from 6 schools in the eastern suburbs of Christchurch, New Zealand rated the impact of the 2010 and 2011 earthquakes upon their professional performance and 13 volunteered to participate in a follow up focus group interviews. The data collected was interpreted via three theoretical/policy frameworks: the New Zealand Teacher Council mandatory requirements for teachers, the basic psychological needs theory and the inclusive transactional model of stress. Contrary to expectations, relationships with learners, colleagues, learner's whanau (family) and the wider community were on the whole perceived to be positively impacted by the earthquakes, while participation in professional development was regarded in more negative terms. The results indicated that teachers were able to continue (despite some stress reactions) because the basic psychological needs of being a teacher were not disrupted and indeed in some cases were enhanced. A model of teacher performance following a natural disaster is presented. Recommendations and implications (including future research undertakings) arising from the study are indicated. It was noted that given the importance of the school in supporting community recovery following a disaster, support for them and consideration of the role of teachers and the preparation for this should be given some priority.

ACKNOWLEDGEMENTS

I wish to express thanks to my supervisors Dr Veronica O'Toole and Professor Neville Blampied for their guidance on this thesis. Thanks also to my teaching colleagues who readily shared their sometimes humorous, sometimes harrowing accounts and their principals who allowed my access to schools. To my father Lex, I offer my utmost appreciation for your words of wisdom, patience and eternal belief in me. To my mother Dianne, and husband Andy, I wish to recognise your unwavering support and encouragement provided throughout this process. Finally, to my son William, who brightens my every day, I dedicate this thesis to you with love.

CONTENTS

Abstract	i
Acknowledgements.....	ii
Contents.....	iii
List of Tables.....	iv
List of Figures	v
Chapter One: Introduction.....	1
Context.....	2
Background.....	3
Research Question.....	4
Rationale.....	4
Theoretical Perspectives.....	6
Chapter Two: Literature Review.....	9
Teacher Responsibilities and Motivation to Perform.....	9
Stress.....	16
Psychological Trauma.....	22
Resilience.....	23
Coping Strategies.....	25
Occupational Stress and Performance.....	28
Stress Studies Related to Natural Disasters.....	31
Employee Survivor Studies.....	37
Chapter Three: Methodology.....	48
Research Design.....	48
Objective.....	49
Research Process.....	50

Settings.....	51
Participants.....	52
Data Collection.....	53
Data Analysis.....	55
Validity, Reliability, Trustworthiness.....	56
Ethical Procedures.....	58
Chapter Four: Results.....	59
Professional Relationships.....	59
Professional Responsibilities.....	69
Learning Environment.....	78
Chapter Five: Discussion of findings.....	89
Theme A.....	89
Theme B.....	93
Theme C.....	97
Exploratory model.....	103
Limitations.....	105
Recommendations.....	106
Chapter Six: Conclusion.....	108
References.....	110
Appendices.....	128

LIST OF TABLES

Table 1:	Themes, Patterns and Codes Arising from Qualitative Data	60
Table 2:	Frequency of Questionnaire Responses of Teachers' Perception Regarding Impact of Earthquake on their Professional Relationships with Others	61
Table 3:	Frequency of Questionnaire Responses of Teachers' Perception Regarding Impact of Earthquake on their Professional Responsibilities	70
Table 4:	Frequency of Questionnaire Responses of Teachers' Perception Regarding Impact of Earthquake on the Learning Environment.....	78

LIST OF FIGURES

Figure 1:	Damage to a Building in the CBD area of Christchurch.....	2
Figure 2:	Map of New Zealand Showing Canterbury Region and the City of Christchurch.....	3
Figure 3:	Redcliffs School Following the February 2011 Earthquake.....	5
Figure 4:	An Exploratory Model of Teachers' Performance Following a Natural Disaster.....	103

CHAPTER 1: INTRODUCTION

Cantabrians¹ are unlikely to forget the 4th September 2010 and the 22nd of February 2011. On both of these days, two large earthquakes (7.1 and 6.3 magnitude respectively) occurred with devastation to buildings and land and in the second event 185 people were killed (New Zealand Police, 2012). Unlike other areas of New Zealand, which were earthquake prone, it was not widely known that Canterbury had two earthquake fault lines that could cause a major calamity; consequently there was a general unpreparedness to cope with such an event (Quigley et al. 2010). Of the two earthquakes that struck the Canterbury region, the epicentre of the first was west of Christchurch and the second close to the city. Christchurch, the largest city in the Canterbury area, was particularly hard hit with the loss of many buildings and significant damage to others; much of the infrastructure of urban Christchurch area suffered. In the second earthquake, major additional destruction occurred. Although in both quakes widespread damage occurred across the city and outlying areas, the impact of the second one was centred more on the central business district (CBD) and the eastern side of Christchurch.

Since 2010 there have been thousands of ongoing aftershocks, a number of them of 5-6 magnitude. Over 100,000 buildings were damaged and 10,000 had to be demolished. Many schools and businesses were closed for weeks to months and some businesses never reopened. A number of schools and businesses relocated either temporarily or permanently. Figure 1 shows the damage to a building in the Christchurch CBD when the February 2011 earthquake struck. It is over 3 years since the last major quake; nevertheless, psychological, social and economic impacts were predicted to be long-term (Adamson, et al., 2012; McCone 2011; Shirlaw, 2014). The major rebuild, which commenced in 2014, is estimated to cost

¹ Cantabrians is the term used to describe the people resident in the district of Canterbury, New Zealand.



Figure 1. Damage to a building in the CBD area of Christchurch. (Source: The Brisbane Times)

NZ\$20–30 billion with houses, commercial buildings and schools given a priority.

Whilst many New Zealanders outside of the Canterbury region and international observers are preoccupied with this reconstruction, in the minds of many Cantabrians, identification with being a survivor is still the foremost thought.

Canterbury (Waitaha) is a New Zealand province located on east coast of the South Island and is mainly composed of the Canterbury Plains and the Southern Alps to the west with the hills of the (extinct) volcanic Banks Peninsula in the east. The Conway River separates the Canterbury region from Marlborough and the Waitaki River is the southern boundary with Otago. It is the largest province by area in New Zealand and with an estimated population of 566,000 in 2013 (Statistics New Zealand, 2013) it is the second largest region by population in New Zealand. Refer to Figure 2 below for the location of Christchurch and Canterbury in New Zealand. The main industries are agriculture and manufacturing although tourism has increased significantly in recent years.



Figure 2. Map of New Zealand indicating Canterbury region and the city of Christchurch. (Source: New Zealand Surf and Snow Tours)

Christchurch (Otautahi) is the largest and only city in the Canterbury area and the largest city in population in the South Island being the 3rd most populous urban area in New Zealand (estimated to be 341,469 in 2013); (Statistics New Zealand, 2013). Apart from Christchurch, there are only three towns with a population over 10000 in Canterbury – Timaru, Rangiora and Ashburton.

There has been considerable research undertaken on the impact of natural disasters on people (Tiefenbach & Kohlbacher, 2013; North, Oliver & Pandya, 2012; Fergusson & Boden, 2014). It is acknowledged that survivors of a natural disaster will experience adverse feelings, normally over time these will decrease, whereas a small number of individuals may develop more serious impacts (Bonanno, Brewin, Kaniasty & La Greca, 2010). Neria, Nandi and Galea (2008), in a highly regarded empirical review of disaster literature covering 27 years, found acute stress disorder (ASD) and post-traumatic stress disorder (PTSD) to be the most likely psychological condition following a natural disaster. This finding was regardless of the nature of the disaster (earthquake, flood, fire etc.), however proximity to the event, gender, age, level of support, occupation and level of training were found to impact upon prevalence

and severity. It is clear that a complex mix of variables contribute to how individuals are impacted upon following a natural disaster.

This current research project concerns the impact of the Christchurch earthquakes on the professional performance of teachers. Teachers were at school at the time of the second earthquake (12:51pm) and for many hours were required to tend to the students' needs in the absence of the parents. There were 288 schools in the region and 446 early childhood centres in February 2011 (NZ Ministry of Education, 2014). It was considered that information obtained from the teachers would provide 'rich' accounts of how their professional responsibilities were managed following the disasters. Although some quantitative data were obtained, it centred on qualitative data using questionnaires and focus groups as the main data sources.

The specific purpose of the research was to ascertain the nature of the impact that a significant natural trauma had on teacher professional performance. Teachers were inadvertently placed in the position of first responders during the February 2011 and June 2011 earthquakes. Although there was a raft of research activities following the earthquakes, and a few related to teachers responses (e.g., Education Review Office, 2013; Dorahy & Kannis-Dymand, 2012; Helton, Kemp & Kemp, 2011; Helton & Head, 2012; Kemp, Helton, Richardson, Blampied & Grimshaw, 2011; Kuntz, Naswall and Bockett, 2013; Mutch, 2013). However, there have been no studies examining the capacity of the affected teachers to engage in their professional role subsequently. The examined literature indicated that there was potential for psychological pathology to develop following the destructive earthquakes and that first responders are more likely to experience negative effects. Accordingly, an examination of on-going teacher functioning was warranted.

I am a qualified teacher and was working in a primary school (Redcliffs School) on the day of the second earthquake. Figure 3 below is an image of what happened to that school when the February 2011 quake struck.



Figure 3. Redcliffs School following the February 2011 earthquake. (Source: Geonet)

This school closed after a subsequent major aftershock in June 2011 and then relocated three times and to date has not re-opened on its original site.

One of the motivations to undertake this research were observations of the personal and professional impact this event had on teachers while they had responsibilities to ensure student safety, relocation, adjustment and ongoing commitment to teach. In addition, being part-time employed at the University of Canterbury working with colleagues who were involved in earthquake research projects was a further motivation to engage in the study; collaborating with them helped to define my research intentions.

I have professional qualifications in teacher education and academic qualification in educational psychology; the skills and knowledge that I developed facilitated my interest in the impact of the earthquakes and prepared me to sustain a research project. A research interest in constructivism has generated this interest further as I was keen to identify teachers' interpretations of their behaviour following the earthquakes. The actors' interpretations of events are particularly significant and in a context in which a natural disaster has occurred, this personal construction of events is particularly valid for understanding the impact upon individuals. Accordingly, it is with this set of knowledge, skills, experiences and the constructivist perspective that I approached the research project.

My interpretation of the literature and findings of this study are informed by perspectives considering what motivates teacher performance (within the context of the mandatory requirements set by the NZ Teachers' Council) and the framework of understandings associated with a range of stress theories. Teacher performance can be assumed to occur for a number of reasons. Regulatory requirements provide a legal specification of behaviour but the individual's commitment to professionalism needs to be assessed via their motivation to engage in such behaviours in day-to-day conditions. It is my contention that the explanatory framework of the basic psychological needs theory (BPNT) (Ryan & Deci, 2000), which is one of the sub-theories of the over-arching self-determination theory, provides a rationale for exploring teacher behaviour. This approach explores job performance and psychological well-ness and its relationship to psychological needs (autonomy, relatedness and competence). Skinner and Edge (2002), in their discussion of how the self-determination theory can broaden understanding of coping and engagement, note the significance of relatedness, competence and autonomy in maintaining motivation.

Interacting with this motivational perspective, a stress theoretical framework was adopted to study teacher professional behaviour/coping following natural disasters. Three

inter-related stress approaches were considered potentially useful to understand the individuals' responses. These were Selye's (1976) general adaptation syndrome, Holmes and Rahe's (1967) social adjustment approach and most importantly the transactional model of Lazarus and Folkman (1984). Selye's approach emphasised that stress arises from inside an individual with a phased physiological and then psychological (alarm, resistance and exhaustion) response. Holmes and Rahe developed ways of measuring stress from an analysis of impacting outside forces, whilst the transaction approach, building on Selye's ideas, emphasises psychological variables that interact with the environmental events. Interestingly, Ntoumanis, Edmunds and Duda (2009) suggest that for a more complete understanding of coping, the transactional approach needs to be integrated with the self-determination theory and hence the benefits of linking coping with the motivational needs theory have already been identified as a useful construct. These perspectives are further discussed in the literature review below.

This thesis is organised into seven chapters. Chapter 1 provides the context and background of the present study, examining the catastrophic earthquakes that struck Canterbury in 2010 and 2011 and an overview of the context and background of the present study; the research question, rationale and method; the theoretical perspectives; prominent international and national literature; the researcher's position and experiences and the listing of chapter contents. Chapter 2 presents a literature review, examining teacher professional responsibilities, different models of stress and research studies concerning trauma and earthquake effects. Chapter 3 gives an outline of the methods used in this study. Following an outline of the research objective, the mixed method research approach is detailed, participants described, research process discussed, data collection and analysis procedures are identified and ethical approval detailed. Chapter 4 describes the results of the study and in particular outlines three key findings: teacher relationships, professional responsibilities and learning

environment. The focus of Chapter 5 is the discussion of the results outlining the significance of the findings, an exploratory model explaining the findings and the research recommendations and limitations. Chapter 6 presents a summary of the research and a conclusion to the study. References and appendices follow the final chapter.

CHAPTER TWO: LITERATURE REVIEW

This study was concerned with how teachers perceive the earthquakes of 2010 and 2011 in the Canterbury region impacted upon their professional performance. A complex range of factors including regulatory frameworks, individual teacher's experiences, school environments, and psychological variables influence teacher performance. In this review therefore, two key ideas are explored – the nature of teacher performance and the responses of them to a natural trauma.

Relevant literature on the impact of earthquakes was located by accessing scholarly articles via electronic databases. Most of these studies were undertaken overseas and only a few focused on the experiences of teachers. Descriptors, 'earthquake' and 'teachers' yielded few results, and those results tended to focus on effects on students with teachers being the source of information. Many studies were located on 'teacher performance' 'teacher stress' and 'teacher burnout' but very few related these to behaviour following a disaster. While studies have recognised the importance of teachers in community recovery attempts (Seyle, Widayatmoko & Silver, 2013) and the need for teacher's mental health to be of paramount importance following a natural disaster (Changchun, 2009), a considerable gap exists in addressing the impact of earthquakes on teaching performance.

Teacher Responsibilities and Motivation to Perform

Most employing authorities throughout the world have regulations that outline teachers' responsibilities to learners, colleagues, whanau (family) and the community. Examples include New South Wales Department of Education and Communities (n.d.), New Zealand

Teachers' Council (2010), Stanley (2012), and the National Council on Teacher Quality (n.d.). These responsibilities usually centre on tasks related to:

- planning, creating resources, teaching, assessing, evaluating the students in curriculum areas
- liaising and planning with colleagues
- development of a positive learning environment including development of positive teacher-student relationships, student caring (physical, emotional, social), understanding of how learners learn, sensitivity to students with identified special and cultural needs, and motivating and disciplining students
- leadership
- consulting with allied professionals to maximise student learning and development
- interacting with parents about progress and cooperating with the school board and parents to maximise their involvement
- engagement in critical inquiry and professional learning

There are of course many variations and understandings about what constitutes teachers responsibilities. For example, there have been discussions about what constitutes 'care' and teachers' role in relation to this notion. Noddings (2000) for instance, discusses an ongoing concern about the importance of humanisation and suggests more attention is needed in the care of students. However, such discussions about issues like this are debatable. What constitutes care? The overall holistic considerations (such as intellectual, psychosocial, physical care) are implied in the above tasks but the actual mandated responsibilities are not always made clear. According to Hall and Mannins (2001) for instance, an updated consideration of 'in loco parentis' and the professional responsibilities of teachers needs to be re-examined in light of legislation that has preceded this understanding, although they make

the point that the ethical under-pining of 'in loco parentis' is useful to maintain when considering care of students. The important consideration here is, where, when and what constitutes care in terms of a teacher's responsibility toward a student? For example, it is clear, that at certain times (e.g., emergencies) teacher responsibility could be uncertain. So, apart from intellectual development, what responsibilities does a teacher have for emotional, physical and social development in both normal and exceptional circumstances.

The New Zealand Teachers Council (NZ Teachers' Council, 2010) provides regulations for the professional behaviour of registered teachers working in early childhood centres, schools and other educational agencies and this specifies the expectations and skills for teachers in relation to their role in schools and centres. These regulations are based upon the capacity of the teacher to:

- establish and maintain effective professional relationships focused on the learning and well-being of ākonga/learners
- demonstrate commitment to promoting the well-being of all ākonga/learners
- demonstrate commitment to bicultural partnership in Aotearoa New Zealand
- demonstrate commitment to ongoing professional learning and development of personal professional practice
- show leadership that contributes to effective teaching and learning
- conceptualise, plan and implement an appropriate learning programme
- promote a collaborative, inclusive and supportive learning environment
- demonstrate in practice their knowledge and understanding of how ākonga/learners learn
- respond effectively to the diverse language and cultural experiences, and the varied strengths, interests and needs of individuals and groups of ākonga/learners

- work effectively within the bicultural context of Aotearoa New Zealand
- analyse and appropriately use assessment information, which has been gathered formally and informally
- use critical inquiry and problem-solving effectively in their professional practice

These criteria are founded upon four key ethical behaviours, namely, commitment to learners, commitment to parents/guardians and family/whanau, commitment to society, and commitment to the profession (NZ Teachers Council, 2004). Ongoing registration is dependent upon teachers displaying these characteristics and hence it is a valid set of criteria to evaluate professional performance. Apart from the regulatory requirements however, there is relatively little understanding about what motivates teachers to sustain and implement the specified practices. What are required are explanations that provide meaning to teacher actions.

Job performance enables an organisation to achieve its goals. The New Zealand standards (e.g., NZ Teacher Registration Board criteria; NZ Education Act, 1989; Collective employment contracts) used for teacher performance are focused upon professional values, knowledge, practices and relationships, including an expectation that teachers analyse and reflect on evidence to improve their teaching practice. Essentially, what this implies is that teachers acquire an effective set of professional skills and apply these to facilitate student learning. However, as stated above, policies and regulations are insufficient to explain why teachers are motivated to maintain effective teacher performance (Brien, Hass & Savoie, 2012).

Research concerning the motivation of teacher behaviour is sparse (Hynds & McDonald, 2010). Many of the earlier approaches emphasised the importance of reward (expectancy theory), compensation for effort (equity theory) and varied and challenging work (job

enrichment theory). However, it was realised that extrinsic explanations were insufficient and it became recognised that the desire to help students and the need for context (e.g., professional support, resources, status, security) and content (e.g., professional development opportunities, autonomy, parental support, collegiality) motivators were necessary. It has been “...concluded that teacher motivation is a complex phenomenon more likely to be directed by intrinsic qualities such as self-respect, responsibility and a sense of accomplishment” (Oregon School Boards Association, 2009, p.529).

From a psychological perspective, one fruitful approach that can account for teacher performance is identification of what *needs* promote the behaviour. In the early 20th Century, a range of needs theories (e.g., Maslow, 1943; Murray, 1938) were developed to account for human functioning and behaviour and such theoretical explanations have related to a number of specific work contexts such as management (e.g., Vroom & Deci, 1992). A more recent and efficacious approach that can explain teacher performance is the basic psychological needs theory (BPNT) a component variant of macro-self-determination theory (Deci & Ryan, 2011). The theory postulates autonomy, competence, and relatedness as basic psychological needs, essential to psychological well-being and performance. The empirical literature in support of this explanation of human functioning is growing.

In BPNT, a theory that utilises both intrinsic and extrinsic perspectives, the concern is with innate psychological needs (autonomy, relatedness and competence) which promote optimal performance (Ryan, 1995). Autonomy refers to the power to make one’s own decisions and choices and accordingly is concerned with freedom, independence and discretion in scheduling and carrying out work. Even when an individual is responsible to management (and so on), autonomy can be maintained if it is considered that the task is

meaningful and has a clear rationale (deCharms, 1968; Deci & Ryan, 2000; Soenens et al., 2007). The need for relatedness is about feeling connected to others - to care for, and be cared by them within a sense of communion (Deci & Ryan, 2000) while feeling unthreatened by issues of autonomy or competence. When collegial relationships develop, it facilitates social support and overcomes loneliness. The third dimension, the need for competence, confirms the importance of having a sense of self efficacy, seeking challenges and extending skills within a context that is increasingly complex and changing – the alternative being, helplessness and lack of motivation to perform (Deci & Ryan, 2000). As Ryan (2009) notes, however, it provides a flexibility of interpretation, “Research on BPNT shows that aggregate need satisfaction predicts individual differences in health and wellness, as well as within-person fluctuations in wellness across time.” (p.1)

As Skinner and Edge (2002) noted, considerable research has been undertaken to understand which factors facilitate coping and resilience. They noted that self-determination is an inherent psychological process that sustains an individual and this is sought out (not necessarily in a conscious manner) to maintain psychological health. The contexts that people live/work in provide ongoing opportunities for their needs to be met, while changes and disruptions within these contexts are met with renewed efforts to satisfy the needs. Therefore, when stress arises, the combined effect of ones need for competency, relatedness and autonomy helps to facilitate the coping process.

The relatedness need in BPNT predisposes people to seek out, initiate and get pleasure from social interactions (Skinner & Edge, 2002). This need to belong occurs across the life span and implies that individuals will favour it and attempt to avoid separation (e.g., Papousek & Papousek, 1979). Competence, the need to experience one-self as effective in

interactions, is a need sought across the life span as well (Skinner, 1996). Deci (1971) indicated that this need can be readily demonstrated when an individual receives unexpected positive feedback and this increases intrinsic motivation – the feedback response confirmed the competence and satisfied the need to be competent. According to Skinner and Edge (2002), both of these psychological variables have been related to the coping process but, in more recent times, autonomy has been researched as another important contributing dimension to coping. BPNT identifies autonomy as an intrinsic desire to promote an individual's preferences, to take actions reflecting the individual's position and to perceive the self as a source of these actions. These constructs - relatedness, competence and autonomy- have been researched for their applicability to a number of work contexts but only recently to teacher performance where autonomy, competence and relatedness were found to be valid factors motivating teachers to perform (Brien, Hass & Savoie, 2012).

While a well-respected approach, some caution however, needs to be adopted in utilizing BPNT. Although the three needs are identified as intrinsic, they are displayed within a public arena that has certain expectations, which can be a force for modification of an individual's goals. For example, intrinsic motivation can be threatened by the evaluation of performance by others, and autonomy could be thwarted if there are insufficient courses of action to choose in complex situations (Moss, 2008). Nevertheless, the approach has real strengths for it synthesizes intrinsic and extrinsic explanations, is supported by research and a relatively straightforward explanation readily operationalized. It provides a convincing framework for assessing performance in the workplace.

Effective teacher performance is predicated upon the understanding that teachers can act, however at times professional performance may be frustrated or diminished by events and

responses beyond a teacher's control. For example, levels of stress resulting from a traumatic event can prevent workers from performing their professional roles (DeAngelis, 1995; Lee, n.d.) and therefore psychological need fulfilment reduced. The earthquakes in Christchurch were traumatic events that caused considerable stress in many people and it can be assumed that the teachers, who were among the first responders, may have become distressed by these events.

It has been recognised for some time (e.g., Kyriacou, 2001) that teachers work in a high stress environment. Undoubtedly, a number of factors impacts teacher performance and it is likely that personal, family social, organisational, environmental, economic, and related stress factors could impact upon their professional performance. In recent years, investigation of teacher stress has become an important area of study (Kyriacou, 2001) mainly examining work-related issue (e.g., colleague interaction, organisational demands). There is little research however reported about teacher response to natural disasters (e.g., earthquakes) and the impact upon their professional performance. In a general sense, however, an appreciation of teachers' response to untoward experiences is often related to the stress response. Accordingly, stress theories can provide an insight into responses following untoward events but it is a complex matter because the personality, skills and specific circumstances of the event/person are mediators of the stress response (e.g., Lazarus & Folkman, 1984).

Stress

Stress is a subjective term. As currently conceptualised it has been described by Selye (1974) as "the non-specific response of the body to any demand for change" (p. 103). These demands for change are internal and external event stressors, which continually challenge the mental and physical equilibrium (homeostasis) of an organism (Chrousos & Gold, 1992).

The events can be either adverse or pleasant and can disturb an individual's equilibrium or ability to cope. This pressure and/or anxiety impacts upon the individual but is more likely to be adversely felt if perceived as a chronic stressor, highly disruptive, or uncontrollable (Gerrig & Zimbardo, 2002). Although stress is a relative phenomenon, different categories of stressors of varying intensity can be identified: crises/catastrophes (*e.g.*, natural disasters, war), major life events (*e.g.*, marriage, death, births), micro-stressors (*e.g.*, daily annoyances such as decisions or deadlines at work) and ambient stressors (*e.g.*, background stressors such as noise, crowding or pollution) (Pastorino & Doyle-Portillo, 2009).

There are two basic stress responses. Biological stress response refers to the way an individual's body reacts to a challenge (Aldwin, 2007), with a subset being physiological stress, including the nervous, immune, and endocrine system responses that occur as a direct response to external stimuli (Dantzer & Kelley, 1989). Psychological stress is manifested by feelings of strain and pressure (Cohen, Janicki-Deverts & Miller, 2007). While 'stress' is an often misused and ambiguous term with limited consensus on its definition, the dominant model of explanation relates to the responses of 'fight vs flight' first identified by Cannon (1915). Applied to humans, this model suggests individuals may reflexively flee from a threatening situation while another may remain.

Three key models explain the phenomena of stress. Selye (1974), an endocrinologist, developed the general adaptation syndrome (GAS), a response based approach, and adopted an internal etiological explanation. It was based upon an initial biological response to a perceived stressful event but recognised the importance of the subsequent psychological reactions. Holmes and Rahe were psychiatrists who emphasised the external etiology of stress and developed the Holmes and Rahe Stress Scale (1967) a stimulus response approach, which

related stressful events to numerical values the sum of which identified the level of an individual's stress. While psychologists Lazarus and Folkman (1984) created a cognitive transactional process model of stress building upon Selye's and Holmes and Rahe's ideas, they emphasised an individual's resources and ability to cope and mediate the stress response – importance was placed upon the cognitive appraisal of the event to determine the level of stress which it would engender.

Selye (1974) recognised the work of Cannon (1915) but observed the 'fight vs flight' response was only the immediate response to a more extensive series of responses to an ongoing threat. His 'general adaptation syndrome' described how individuals reacted both initially, and after the threat has passed and outlined the stages of 'alarm', 'resistance' and 'exhaustion' experienced during stressful situations. Although adaptation to stress is a response pattern, stress can be harmful and indeed exposure to chronic stress can result in significant health deterioration, even death. To balance such untoward pressures a state of homeostasis is sought and this is known as the allostatic load (McEwen & Stellar, 1993) - the ongoing effort that is attempting to maintain a state of homeostasis. While adaptive efforts can minimise harm by attempting to manage stressors, constantly striving for the balance of homeostasis is taxing on the body. Cumulative stress and repeated and ongoing effort to adapt, can accelerate illness and disease.

Selye (1974) noted, however, that stress is more than mere nervous tension and a deviation from homeostasis for it can be experienced without damage and its presence is not necessarily detrimental. In relation to this, he categorised stress into two dimensions- distress and eustress. 'Distress' was considered a negative state with individuals believing their coping resources were not adequate to meet the circumstances and 'eustress' a positive state

whereby individuals perceived the obstacles to be a manageable challenge and sometimes pleasurable. He postulated that on-going stress, which is not resolved or managed, is 'distress', which could lead to depression, withdrawal and anxiety, and on the other hand, 'eustress' was on-going stress that enhanced performance.

Selye's (1974) work was a significant contribution to understanding how stress influences an individual and its relationship to illness. However, there are some limitations in his explanations – he did not clearly identify the interaction of the stress response with the physiological/medical etiology, while varying stressors have been found to have different and variable physiological responses (Mason, 1971). Additionally the validity of a trial using rats to develop a theory for humans is uncertain and finally, he appeared to overlook human individual differences. Given these uncertainties, Selye's theory needs to be approached cautiously and used more as a general guide to understanding stress.

A number of commentators have expanded upon Selye's ideas. Holmes and Rahe (1967) developed the Social Readjustment Rating Scale, founded upon the notion that specific stressors, related to person-person interaction life events, can be quantified and related to illness. The individual ranks each life event (e.g., death of spouse; going on a holiday) on the questionnaire and the score supposedly predicts if a person will experience illness symptoms. Although there is value in relating life-events to levels of stress, there have been a number of limitations identified with the scale. For example, individuals' perceptions of an event vary – one may consider divorce a happy event while another finds it very stressful and furthermore the distress and eustress distinction overlooked. The ability to cope with different events will vary. The validity of the questionnaire in terms of its applicability to different cultures and the construction of items are of concern as well

(MacFarlane, Norman, Streiner & Roy, 1983; Sturt, 2009). Furthermore, it does not include all sources of stress – it deals with life events only and overlooks other potential sources of stress. For example, using a quantitative analysis of impacts upon victims of a significant earthquake, Kwon, Maruyama and Morimoto (2001) indicated that an earthquake could impact significantly in an adverse manner upon an individual's mental health. But there is a range of criteria determining the relative impact of such events - knowledge about the loss, hazard and likelihood of recurring risk, impact on the community, ability to escape, perceived controllability, onset speed, and being either observer or involved first-hand (Figley, Giel, Borgo, Briggs, & Haritos-Fatouros, 1995; Schwarzer, Schulz, & Berlin, 2001).

Lazarus and Folkman (1984) acknowledged the importance of Selye's (1974) distress theory but promoted the idea of a cognitive appraisal theory, which extended the approach to include individuals' perceptions about their ability to cope with the situation. This goes some way to overcoming Selye's and Holmes and Rahe's (1967) notion of a common universal response to stress. The model postulates that individuals make primary and secondary appraisals of the event, primary appraisal assessing the level of threat and the secondary appraisal assessing the sufficiency of the resources (psychological, material, etc) to meet the demand of the stressor. If an individual appraises an event as positive and manageable, the emotional reaction is likely to be one of happiness or anticipation. However, another person may experience the same event, appraise it as negative, and feel incapable of managing the situation, experiencing emotions such as sadness or fear. As indicated, this explanation is an advance on earlier thinking because it signifies the importance of understanding how individuals' reactions to stressors vary, and how interpretation of the same event influences contrasting levels of stress experienced and the differing capacities to cope (Smith & Lazarus, 1990). Furthermore, it is an expansive approach as it can be useful

for understanding more than individual and social life events. As Glanz, Rimer and Viswanath (2008) note, the framework can be useful for not only the traditional research contexts but also “.....applications that respond to emerging and contemporary health issues, including natural disasters (for example, hurricanes, tsunamis) and disasters due to human actions or technology failures (for example, terrorism, plane crashes)” (p. 230). Some criticisms can be levelled at the approach however. The model is linear (i.e., primary assessment is followed by secondary assessment and then coping strategies) but individual variation could disrupt this process and make it difficult to assess (Fordham, 2011). Moreover, the distinction between the two appraisal systems is likely to be problematic because it is likely that the appraisal systems could interact. It is also very difficult to measure because of the individual variation to stress (Schwarzer, Schulz, & Berlin, 2001).

The preceding discussion on stress indicates that while there is considerable disagreement over models of explanation, these developments have contributed to the understanding of how an individual responds to pressure and threat. Selye (1974) highlighted the importance of a biological stress and, along with Cannon (1915), offered significant contributions to the development of a unified model of stress, while Holmes and Rahe (1967) noted the (cumulative) impact of life stressors on illness. Lazarus and Folkman's (1984) transactional model in emphasising the importance of individual perception in coping with demanding circumstances promoted a cognitive explanation. Another important consideration arising from Selye and the transaction model is that while stress is generally referred to as a negative experience, it can also present a challenge, which may be enjoyable. While everyone experiences stress in their lives, it is not until an individual experiences a stressful situation that makes them feel overwhelmed (and possibly traumatised) by a stressor that it becomes a problem.

Psychological Trauma

Psychological trauma, often one of the manifestations of stress, can result from a harrowing experience. According to the American Psychological Association (n.d.), psychological trauma is defined as “an emotional response to a terrible event like an accident, rape or natural disaster. Immediately after the event, shock and denial are typical. Longer term reactions include unpredictable emotions, flashbacks, strained relationships and even physical symptoms like headaches or nausea.” (para. 1) Essentially, it relates to detrimental impacts upon the psyche because of a traumatic event. The event may be isolated or repetitive leading to individuals feeling completely overwhelmed and unable to cope with the demands of the situation.

DePrince and Freyd (2002) suggest while psychological trauma may result from a wide range of disturbing circumstances (e.g., abuse, violence, discrimination, alcoholism, life-threatening medical conditions, catastrophic events and war) it often results from events whereby individuals ideas about the world and their human rights are violated, placing the person in a state of extreme confusion and uncertainty. It is therefore a consequence of subjectively interpreted experience. Furthermore, long-term exposure to extreme poverty or some other milder forms of circumstances can also result in psychological trauma. Schnurr and Green (2004) highlighted the interplay of psychological trauma and physical trauma, whereby one may experience psychological trauma because of physical trauma, and often detrimental physical health may occur as a result of psychological trauma due to an individual’s inability to remain active.

Carlson and Josef (2004) in considering the relative nature of the aetiology of psychological trauma, outlined that the severity of psychological trauma symptoms are

dependent on the type of trauma, the personality of the individual, and the amount of social support received. Furthermore, re-experiencing the trauma mentally or physically is common for those experiencing psychological trauma, and some individuals may use alcohol or drugs to suppress unpleasant memories. Regardless of its relative impact, Rothschild (2000) outlined that there was a very wide array of symptoms and outcomes resulting from psychological trauma, although commonly victims experience anger, insomnia, nightmares, exhaustion (which may be quickly followed or preceded by hyperactivity), memory loss, vague thinking, disassociation, confusion, self-esteem issues, depressive moods and a feeling of identity loss.

The observed responses to trauma are often the outcomes examined in stress research studies. They assume a particular importance because of their potential for behavioural and physiological responses. Trauma can develop from a wide range of situations perceived as upsetting to an individual and the severity of which is dependent on the nature of the situation and the individual's perception. Although trauma can be devastating and destructive and interpreted from a victim-hood perspective, sometimes the opportunities it affords to individuals are overlooked for positive changes and opportunity. All individuals experience trauma at some stage and the context it affords for future development is important to consider. Furthermore, the resilience of individuals to trauma is often disregarded in the explanations about psychological trauma. The human capacity to deal with trauma is often not discussed.

Resilience

Studies following disasters have focused almost exclusively on the adverse impacts experienced by survivors, such as PTSD, while little attention has been given to investigating

who recover and/or exhibit an absence of trauma symptoms (Bonanno, Galea, Bucciarelli, & Vlahov, 2007). Individuals will invariably experience some adverse impacts because of the traumatic event, however those that remain on a trajectory to recovery, with only short term interruptions to their level of functioning are considered to be resilient (Bonanno, 2004). Psychological resilience is defined by the American Psychiatric Association (2014) as an individual's ability to adapt to stress and adversity while Bonanno et al. (2006) classified individuals who report either one or less PTSD symptom within 6 months of exposure as having resiliency. Although significant numbers of resilience studies have centred on children (Wolin & Wolin, 2010; Werner & Smith, 1992), interest has increased for adult (Bonanno, 2004; Rachman, 1978), and community resilience (Kimhi & Shamai, 2004; Auguierre, 2006).

Despite psychological resilience often being viewed as a personality trait which is present or absent in individuals, it remains as a concept that is poorly understood and operationalised. Accordingly, an increasing number of studies have focused on trying to establish what predicts individual resilience. The following outlines some of these studies. Bonanno, Galea, Bucciarelli, and Vlahov, (2007) found when investigating resilience in New York adults 6 months following the World Trade Disaster, that resilience was predicted by a complex mix of variables, namely, gender, age, race/ethnicity, education, level of trauma exposure, income change, social support, frequency of disease, and chronic life stressor exposure. In the study conducted by Bonanno et al., married Asian males who had university degrees and earned in excess of \$100,000 per annum with lower levels of trauma exposure were most likely to be resilient, however resilience was wide spread among participants, with no less than 30% of each demographic variable group exhibiting resilience. Horton and Wollander (2001) and Carlson and Josef (2004) found level of social support to predict resilience, while Skinner and Edge (2002) suggested that individuals will naturally seek out

others in an attempt to fulfil the need of relatedness. Considering this, studies have begun to focus on existing communities and endeavoured to examine the resilience exhibited following disasters.

Community or social resilience is characterised by Macguire and Hagan (2007) as the capacity of a community or group to recover from or respond positively to crises. Social resilience is understood to comprise of three aspects, namely resistance, recovery and creativity (Kimhi & Shamai, 2004). Resistance refers to the degree to which a community can resist disruption without undergoing any long-term changes. The less resistant a community, the more the disruption is felt. Recovery relates to a community's ability to 'bounce back' and return to its pre-disaster level of functioning while creativity refers to adapting to new circumstances and learning from the disaster experience, therefore achieving higher levels of functioning and future resilience.

Although resilience is not widely considered to be a choice, it appears that individuals and groups' choices and actions following disasters can represent and, indeed, breed resilience. Accordingly, choices about coping with stressors impacts upon the level of stress experienced and one's ability to cope with future traumatic events. It is clear that the coping strategies of Lazarus and Folkman (1984) are related to an individual's resilience capacity.

Coping Strategies

What it means to cope in adverse situations and the influences on strategy choice are important considerations in understanding the stress response. Weiten and Lloyd (2008), for example, indicate that coping involves a conscious effort to solve personal and interpersonal problems as a means to mastering, minimising or tolerating stress. Carver and Connor-Smith

(2010) note however, that there has been a limited consensus on how the various strategies can be devolved into an encompassing model of explanation - even though many coping strategies have been identified.

In an attempt to provide a theoretical perspective on coping behaviour theory, Otto Fenichel and Karen Horney adopted a psychoanalytical explanation. Fenichel (1999) studied both children's and adults coping efforts and suggested that coping was a "work of learning" or "work of adjustment". In this process individuals "must acknowledge the new and less comfortable reality and fight tendencies towards regression, towards the misinterpretation of reality", though such rational strategies "may be mixed with relative allowances for rest and for small regressions and compensatory wish fulfilment, which are recuperative in effect" (Fenichel, 1999, p.554). Horney (1939), proposed four somewhat more distinct strategies for coping with stressors, one of which was considered 'healthy' and three 'unhealthy'. "Moving with", the 'healthy' strategy, refers to developing relationships, communication, compromise and shared decisions. "Moving towards", "moving against" and "moving away" were considered unhealthy coping strategies and referred to compliance, aggression and withdrawal respectively. Both Fenichel and Horney acknowledged that attempting to cope may involve individual adopting maladaptive strategies. With regard to Cannon's (1915) 'fight' vs 'flight' model, Horney's "moving against" can be interpreted as 'fight' and "moving away" related to 'flight'. Although these are rather outdated theories, they are still relevant to understanding the instinctive responses of individuals when they are faced with threatening circumstances.

Contemporary theorists, such as Weiten and Lloyd (2008) take a more cognitive-behavioural approach to coping and proposed three broad coping strategies: appraisal

focused, problem focused and emotion focused, approaches similar to Lazarus and Folkman (1984). Appraisal focused strategies attempt to change thinking about a problem, by employing denial or distancing from problems. Problem focused strategies concentrate on trying to understand the problem by finding out as much information as possible, and endeavouring to change or eradicating the problem. Emotion focused strategies emphasize managing the emotions that accompany stress such as using a distraction technique or employing a relaxation strategy. In determining which strategy is chosen it is important to recall that Carver and Connor-Smith (2010) noted individuals' preference for particular strategies may be determined by personality, social context or the nature of the stressor present, but also indicated that other factors may also be important. Accordingly, an individual's coping strategy is relative to a number of variables.

Gender may be one such factor, influencing coping (Taylor, Klein, Lewis, Gruenewald, Gurung, & Updegraff, 2000). For example, while 'fight vs flight' remains the preferred model for the analysis of how males deal with stressful and traumatic situations, Cohen and Willis (1985) suggest the model is incomplete and should include 'coming together' as an important variable in stressful times. Taylor, et al. (2000) proposed that females are more inclined to use 'tend and befriend' as a coping strategy, an approach related to the notion of protecting offspring and seeking out support from the social group. Williams (2003), although noting the importance of the basic 'fight vs flight' response for both males and females, also identified differential responses - males were more likely to resort to distinct aggression or withdrawal behaviour.

It is clear that although there is a growing literature regarding coping strategies there is a need for further theory development and research particularly around issues of who,

where, when and how. What is known however is that there are a number of variables associated with the choice of coping strategies including the nature of the situation, personality, resilience social context and gender.

Occupational Stress and Performance

One area that has attracted increasing interest is stress related to job performance. The study of occupational stress is somewhat different to general stress studies because it is related to the individual and the organisation. Chen (2008) notes that there is limited agreement over a universal definition of occupational stress although it is acknowledged it is an individual-organisational interaction issue and it is also accepted that it is detrimental for both the individual and the organization, as it lowers motivation and increases personnel turnover (Wu & Shih, 2009).

Stress studies related to life-events (e.g., Selye, 1956) have emphasised the individual and minimal attention given to the context, apart from it being a precipitating factor. Nevertheless, some advances have been made in establishing a criterion measure of occupational stress. For example, the Occupational Stress Inventory Revised (OSI-R) as proposed by Osipow (1998) measures job stress (along with other factors) across six domains. *Role overload*, refers to whether the demands of the job exceed that of the resources available, and whether an individual is able to meet required workloads. *Role insufficiency* is concerned with whether an individual's training and qualifications are suitable to the requirements of the position. The clarity provided to the individual about priorities, expectations and appraisal criteria is a measure of *role ambiguity* whilst *role boundary* embodies the role demand conflicts and loyalties in the work place. Whether an individual possesses a feeling of responsibility for the performance and wellbeing of other employees

and colleagues is measured by *responsibility* and *physical environment*, which gathers information on how safe a person, is in the workplace and to what extent there is exposure to hazardous physical conditions. This inventory has considerable value because not only is it a reliable and valid measure but also an integrated measurement tool comprised of three sections - job stress (as indicated), psychological strain and coping measures. Overall, its merit is clear for it has advanced understanding about occupational stress.

Some theoretical advances have been made in the occupational stress area as well. For example, the Job Demands Control (JDC) Model (Karasek, 1979; Karasek & Theorell, 1990) has become a highly regarded theoretical approach to job stress. This model proposed that employees' level of stress is significantly impacted by the amount of control and decision-making they are given (i.e., opportunities to decide how aspects of the job occur, chances to be creative, how repetitive the job is) and the demands of the position (i.e., time pressure, amount of work, pace of work, number of interruptions). Viewing the amount of control and demand as two continua, four types of jobs are postulated: *passive* (low control/low demand), *active* (high control/high demand), *high strain* (low control/high demand) and *low strain* (high control/low demand). It was proposed that 'high strain' positions with a low level of control, yet a high level of demand, are the most stressful. However, the model factored-in individual personality traits, which, as suggested by the general stress theory, indicates that while one person may be stressed by a situation, another may be unfazed. Therefore, while one may become stressed and have a high level of frustration in a position which is demanding and does not permit decision-making, another may prefer to be excluded from the responsibility of decision-making.

Another theoretical model emphasises individuals' personality differences and this is known as the person environment fit (P-E Fit) model (Kristof-Brown, Zimmerman, & Johnson, 2005). It refers to the extent to which the employee and the work environment match. Cable and Edwards (2004) suggested needs, values, goals, skills, beliefs and personality of an individual are important determining factors while environmental factors such as the demands of the position, rewards, values, morale, and physical conditions of the workplace need to be considered. The P-E Fit model has attracted considerable discussion in the past decade, however due to the multitude of individual characteristics and wide-ranging variables of workplaces, there has been difficulty in adequately conceptualising it into a unified model. Consequently, specific domains within the model have been proposed upon which most of the research has been based (Guan, Deng, Risavy, Bond, & Li, 2010).

Person – organisation fit research has been one of the most widely studied areas within P-E Fit research - it is concerned with the match between the individuals values and that of the organisation. A strong person – organisation fit has been related to the development of a sense of community, increased sense of trust and loyalty to the organisation and decreased turnover (Andrews, Baker, & Hunt, 2011). *Person – job fit* refers to the match between a person's characteristics and that of a specific job (Kristoff-Brown, Zimmerman & Johnson, 2005). *Person – group fit* refers to the match between groups of colleagues and work-groups and how these groups may influence individual workers. A relatively new domain, suggests that a person – group fit encourages job satisfaction and feelings of belonging within the workforce whereas a *person – person fit* is concerned with the match between individuals within the workplace (Boon & Den Hartog, 2011). The most commonly researched dimension is the *person – supervisor* relationship which, when is a favourable, relates to person and supervisor satisfaction.

These theories and approaches attempt to explain the characteristics and causes of occupational stress. While these are helpful in understanding occupational stress in general and how and why stress within the workplace may occur, they provide limited assistance in attempting to understand and explain the management of workplace stress in specific settings (e.g., schools, factory floor). Furthermore, although there are apparent connections between occupational stress and other stressors (e.g., family, financial, and natural disaster stress) this has been largely unexplored and additional research is needed. There is also an evident concordance between aspects of occupation stress and person-fit models and the BPNT and these links need exploring.

Stress Studies Related to Natural Disasters

In this section, a range of studies that have examined the effects of stress on different populations in the past 20 years is examined, particularly those concerned with psychological effects of trauma following a natural disaster. Following this, a range of studies focused on the impact on people who, by occupation or coincidence, find themselves in the position of first responder following a mass traumatic experience are discussed.

According to Gray, Maguen and Litz (2004), nearly all those exposed to a large-scale traumatic event will experience psychological distress in the immediate hours, days or weeks following. This is a natural human response to adversity and for the majority of people distress subsides over time and no long-term psychological effects are present. However, for some individuals impacts remain and symptoms of distress may intensify. Not surprisingly, Neria, Nandi and Galea (2008) outline that over the past 30 years ASD and associated PTSD are the most commonly experienced and studied psychological/psychiatric conditions following the experience of a large-scale event such as a natural disaster. Conducting an

empirical review of PTSD studies over the period 1980 to 2007, they found PTSD to be the most common response found in survivors and first responders. However, Fullerton, Ursano, Norwood and Holloway (2003) noted that some demographic variables predicted the prevalence, severity and symptomology of ASD and PTSD - females, children and the elderly were more at risk.

A number of studies have considered this differential impact. For example, Simons, Gaher, Jacobs, Meyer and Johnson-Jimenez (2005) discussed the risk of PTSD and ASD development in females when compared to males who have experienced the same trauma. However, gender disparity has been an area of minimal academic research (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). The studies that have been undertaken usually conclude it is the *type of trauma* experienced by women that predicts the occurrence of PTSD and ASD, rather than it being gender-determined, because it is women that experience more assaultive trauma (e.g. molestation, rape, physical assault); (Breslau, 2002). Still, little is known about other types of gender trauma impacts (e.g., natural disasters) and the occurrence of ASD and PTSD. However, some indication of the impact of large-scale disasters upon gender can be ascertained by the work of Norris, Friedman, Watson, Byrne, Diaz and Kaniasty (2002) who conducted an empirical review of more than 250 articles, concerned with 160 separate large scale disasters published over two decades. They found that while 80% of studies *did not* measure gender disparities, those that did, reported a significant gender difference in post disaster stress: 94% of these studies found females more adversely affected than males regardless of age, ethnicity, proximity to event, or disaster type.

Another important factor is that impact is not contextually bound and therefore whenever a trauma exists it has potential to cross personal, work, social and community

boundaries. For example, Lo (2003) in considering ‘work life’ and ‘personal life’ of a person indicates the interactive nature of the two dimensions and notes that the two cannot be assessed independently. Accordingly, the phenomenon of family stress can predict workplace stress, burnout and job dissatisfaction – stress is a dynamic and interactive process. In the following section, this interactive effect of trauma upon an individual and the family is discussed.

Within the past 30 years, there has been a focus upon ASD and PTSD in children following large-scale trauma events and the connection with adult’s responses to the natural disaster. Many studies regarding children’s ASD and PTSD development following a large scale traumatic event focus on measuring the occurrence (La Greca, Silverman, Vernberg, & Prinstein, 1996) and severity (Kassam-Adams & Winstone, 2004) but some research has included the impact of parental response upon ASD and PTSD prevalence among children. For example, McFarlane (1987) conducted a longitudinal study to examine the prevalence of PTSD in schoolchildren following an Australian bushfire and assessment included analysis of symptoms and parental response. While PTSD symptoms did not decline over an 18-month period, the mother’s response to disaster was a better predictor of PTSD diagnosis in children than direct exposure to the bushfire. In a number of other studies (e.g., Thienkrua et al., 2006; Weems et al., 2010) the onset of ASD and PTSD in children following the natural disasters it can be speculated that the parents psychological health may have been a factor in the onset of the conditions.

The above-detailed studies provide insight into the impact on individuals of experiencing a large-scale traumatic event with ASD and PTSD being the most common psychological response. It is clear that the impact of a major traumatic event can be multi-

faceted depending upon the individual's responsibilities and role. Apart from caring for self and dealing with the impact, at times care is extended to others who may be traumatized and this, in itself, may contribute to additional stress upon the individual.

A further factor that can contribute to additional stress is if the individual is in an occupation as a helper or by coincidence involved as a first responder. For example, teachers inadvertently found themselves in the position of first responders following both the February 22, 2011 and June 13 2011 earthquakes in Christchurch as both occurred in the middle of the day during school time. Teachers had to stay at school with the students until the parents arrived to collect them (some as late as 10pm that evening). This meant that they had to deal with students who were distraught and anxious. This is a situation whereby a stressed individual is required to assume additional responsibilities of others who themselves may be stressed.

Most of the research on 'first responders' or 'helpers' or 'volunteers' in disasters has focused on specific occupational groups (e.g., firefighters, police, disaster recovery workers). These are groups easily identified as exposed to adverse large-scale events as part of their job and recruitment as participants in research to explore this issue is more readily achieved. Gregerson (2007) outlined that following a disaster, those in the helping profession found their workplace demands increased rather than decreased and while attempting to meet this increase in demand, workers had to deal with their own reactions and feelings. Responses identified by Freedman (2004) included 'psychological numbing' and 'automation', as reactions which enabled the individual to cope with the immediate situation, especially if there was a felt sense of duty. Need-less-to say, in addition to the above, ASD and PTSD

were common medium to long-term outcomes for workers in the helping profession following a large-scale traumatic event.

Studies indicate that high-risk occupation groups do have higher incidence of stress responses but that the training may alleviate some of the impact of the trauma. In an attempt to ascertain the differential effects of natural disaster on professional and non-professional (minimal training) fire fighters in the 1999 in the Chi Chi earthquake in Taiwan, Guo, Chen, Lu, Tan, Lee and Wang (2004) investigated the prevalence of PTSD following the disaster. Professionals reported PTSD at a rate of 19.8%, whereas non-professionals had a rate of 31.8%. This was significant research because it highlighted the implications of having untrained personnel as a first responder - they were more likely to become stressed. Nevertheless, it was reported that the trained occupation group were susceptible to high levels of trauma anyhow. The varied conditions experienced by fire-fighters - proximity to death, severity of trauma, perceived threat, disaster related post-disaster personal events (e.g., loss of a loved one, unemployment and exposure to subsequent traumatic incidents) - became risk factors associated with the development of PTSD (Beaton, Murphy, Johnson, Pike & Corneil, 1998; Bryant, 2005). Similarly, 7 and 13 months post-disaster, airport workers who were highly exposed to potential trauma and those with previous disaster experience were also found to be more at higher risk of ASD, PTSD and depression (Fullerton, Ursano & Wang, 2004).

A number of research studies have investigated the impact of internationally well-publicised disasters but no data collected on the variable impact on recovery workers and volunteers. The impact of the September '11 World Trade Center terrorist attacks on 11,700 rescue and recovery workers and volunteers was investigated by Smith (2004) and upon initial assessment 51% of participants met the criteria for clinical mental health evaluation.

Thirteen percent of participants reported symptoms consistent with a diagnoses of PTSD with depression, panic and general anxiety reported by 6% of workers and 10% of workers having dependence on alcohol. Following hurricane Katrina, difficulty with sleeping was the most widely reported psychological issue, as well as feelings of isolation and unhappiness among first responders. Re-experiencing, avoidance, hyper-arousal, increased alcohol consumption and spousal confrontation was reported by Kronenberg, Osofsky, Osofsky, Many, Hardy and Arey (2008).

A limited number of studies have been conducted on non-traditional first responders (i.e., bystanders or those who happen to be working in the vicinity at the time of the event) but the lack of quantitative data has made comparison with traditional first responders difficult, although it was observed that this group is impacted upon. Johnson, et al., (2005) investigated through the use of unstructured interviews the impact of being placed in this position and it was noted that road workers, labourers, heavy vehicle operators and mechanics reported significant levels of depression, drug use, anxiety, suicidal thoughts, and PTSD symptomology.

Another phenomenon that has been researched relates to the development of rapport and support amongst the by-standers and the others/strangers around them following the trauma. Williams and Drury (2009) explained that ‘communities of circumstance’ are often created where bystanders find themselves in adverse situations with strangers. A sense of having a shared fate and common goal brought the survivors together and bonds formed between individuals who normally would not associate. Cocking (2013) for example, studied ‘zero-responders’ (bystanders who became first responders) following the London Bombings in 2005 and found individuals to spontaneously co-operate with complete strangers to help

each other and assist emergency service workers. It has become clear from such observations that survivors can develop a shared social identity and can expect to give and receive support and experience a sense of solidarity within the group. Furthermore, it was noted these groups became more important to individuals than other groups, such as their existing friend groups, and lasted long after the threatening situation has passed (Drury, 2011).

Overall, the by-stander and responders research has indicated that those who experience disaster are placed at risk of developing psychological trauma. Whilst most research has been undertaken on the trained first responder reaction, it is indicated that others who provide this support or even by-standers are also at risk. Both of these groups may also have to assume responsibility for (dependent) others who in-turn may be stressed by the event. These findings indicate the complexity of understanding the nature of an individual's response to trauma and the need to consider the psychosocial and social implications.

Employee Survivor Studies

As discussed, considerable research can be located on the impact of disasters upon individuals and groups. While most individuals will recover from adverse experiences, of those that do not, ASD and PTSD are the most likely outcomes following maladjustment after experiencing trauma and accordingly they are the most studied post-disaster psychopathology of the past 30 years. Although it has been acknowledged that during times of turmoil survivor employees will require flexibility and support (e.g., Wang, 2008) little research has been conducted to determine whether such adverse impacts extend into the workplace and affect individual worker performance.

One study, undertaken by Qin and Jiang (2011), researched the impact of the Wenchuan earthquake on business employees. It detailed findings about absenteeism, job satisfaction and job performance among 206 survival employees from 33 affected businesses, 3 months prior to and 3 months following the earthquake. It was revealed that the experience of a natural disaster had significant impacts upon the three domains measured. Employees' absenteeism decreased significantly, as did both intrinsic and extrinsic job satisfaction and perceived working conditions, whereas task performance, contextual performance and overall performance significantly increased. Interestingly, employees learning and innovative performance was not impacted upon noticeably. The decrease in employee absenteeism was accounted for because of the severe job shortage that followed the disaster and employees considered absenteeism would not reflect well on their commitment to the company, should redundancies occur. The researchers also suggested that job satisfaction was decreased owing to the lack of job security, the lower remuneration and opportunity for promotion. Furthermore, perceptions of working conditions declined and this contributed to a decrease in job satisfaction. It was concluded, that in the absence of communication it would have been preferable to discuss issues about redundancies, pay cuts and working conditions, and attribute the changes to the disaster (rather than other motives) and this might help workers understand and enhance their motivation. By doing this, they were more likely to realize that conditions were likely to improve as the community and industry were restored to pre-quake conditions.

While Qin and Jiang's study was a significant research undertaking providing necessary information about survivor employees, the study had limitations. Time delay in gathering information was one issue – data gathering occurred 3 months after the earthquakes and it was likely therefore that participant's perceptions were a function of memory. In

addition to this, participants' views may have been contaminated by the general upheaval of a post-disaster workplace and community, leading to unreliable perceptions of satisfaction prior to the earthquake. Detailed information about a number of significant details was also missing; the nature/type of the specific industries was not described and background data on participants was lacking and therefore comparisons between the differing occupations could not be undertaken. Additionally, the questionnaires used were not designed specifically for the varying professions and may therefore have been invalid for some of the participants.

A series of research projects followed the 2010 and 2011 earthquakes that occurred in Christchurch New Zealand. Helton, Kemp and Kemp (2011) and Helton and Head (2012) undertook experiments in a Christchurch setting with regard to the impact of earthquakes on cognitive functioning and it was noted that cognitive functioning could deteriorate following natural trauma with the likelihood that behaviour could be impacted upon. Although experimental in nature, these research projects highlighted that an earthquake could potentially influence an individual's performance. In another study (Kemp, Helton, Richardson, Blampied & Grimshaw, 2011) undertaken under the auspices of the University of Canterbury in Christchurch, there was clear evidence that the public experienced sleeplessness, cognitive dysfunction, heightened stress, depression and anxiety following the Canterbury earthquakes. On the other hand, it was reported that some individuals experienced positive experiences such as increased relationships with neighbours and enhanced academic performance by NCEA students (Connelly, 2013).

In the only known overseas study that focused on teachers following an earthquake, Seyle, Widyatmoko and Silver (2013) investigated the impact of a magnitude 6.3 earthquake in Yogyakarta (Indonesia) on teachers coping and mental health (compared to other, non-teachers in the community), perceptions of performance and classroom behaviour, before and

after a brief intervention. Forty-three (33 females and 10 males) teachers from 6 schools were surveyed prior to and 6 weeks following attendance at a 3 day intervention course. The course focused on psycho-educational information on the impact of disasters on adults and children, and gathered data on behaviour management, student attention, relaxation, and coping exercises. The questionnaire assessed independent variables such as level of exposure to the earthquake, prior exposure to traumatic events and demographic variables. Dependent variables assessed included post-traumatic symptoms, depression, perceived classroom efficacy and perceived classroom behaviour. While teachers' level of exposure to the earthquake and depression was comparable to a sample of parents surveyed, teachers reported significantly fewer posttraumatic symptoms than parents did. Levels of depression were related to classroom behaviour, yet not teacher self-efficacy. The researchers explained that the relationship between depression and motivation was likely to explain this finding. As an alternative, it was postulated that depressed teachers could view particular behaviours in a more negative light, than teachers with no depressive symptoms, or indeed, having a class of children with negative behaviours could cause teacher depression. No relationship was found between depression and post-traumatic stress symptoms, yet post-traumatic stress symptoms (particularly arousal symptoms) predicted teacher self-efficacy. This was surprising, the researchers were unable to explain why this occurred, and suggested further research was needed. Following the intervention, a significant decline in post-traumatic stress symptoms and depression was reported, but there was no impact upon teacher self-efficacy or classroom behaviour. Seyle, Widyatmoko and Silver (2013) suggested this demonstrated (at least in the short term) that the intervention was successful in reducing the participants' negative psychological effects. The researchers further explained that teachers' perceptions about their teaching efficacy and classroom behaviours were effected, but since the intervention was focused on disaster recovery, it was not sufficiently impactful upon these areas.

Undoubtedly, the Seyle, Widyatmoko and Silver (2013) study made a significant understanding toward appreciating post-disaster teacher employee responses. Clear links were established with disaster related depression and perceptions about classroom behavior and post-traumatic stress symptoms and self-efficacy. Additionally, it was demonstrated that the use of an intervention was useful in alleviating some of the post-traumatic symptoms experienced by teachers. Nevertheless, the study had some limitations. Firstly, it was conducted 6 years following the earthquake and, although the researchers outlined that post-traumatic symptomology incidence was still relatively high in the community, (up to 28% among parents) (Seyle, Tan, Widyatmoko, Lam & Silver, 2010), the immediate effects of the disaster may have passed and affected teachers may have left the profession. Secondly, the research objective was to examine the impacts of the earthquake on the teacher performance; however, the study focused more on teachers' self-efficacy. Given that many studies detail the links between self-efficacy and job performance (e.g., Stajkovic & Luthans, 1998) and assumptions are drawn, preferably an assessment of teacher performance post-disaster would have provided a more valid indication of causative links.

A study undertaken by the NZ Education Review Office (2013) examined the impact of the 2011 Christchurch earthquakes on the local education community. Following this earthquake, the Office was unable to conduct many of its scheduled school reviews in Christchurch schools due to the damages sustained, and what's more, many schools were closed for a number of weeks. As a result, a limited qualitative study was commissioned which focused on how 17-affected primary and 27 early childhood centres coped on the day of the February 2011 earthquake and in the immediate days, weeks and months following. The findings therefore provided insight into principals' and teachers' workplace behaviours

as ‘survivor employees’ following a large-scale natural disaster. Principals and teachers were asked to provide (through any means) information relating to what occurred on the day. This included how the evacuation was managed, what hazards were encountered, how the organization arranged for the collection (or non-collection) of children, how communication occurred with the parents and community, what occurred in the early days of the disaster, the return to school and how any relocation or operating from temporary or shared sites was undertaken. The submitted anecdotal accounts were categorized into 4 themes: *Keeping children safe, supporting children’s learning, supporting staff and families and managing ongoing anxiety*. Keeping children safe referred to calming and reassuring children on the day and a range of responses were identified. This included, singing, reading, providing blankets, food and water, calming and reassuring parents (to avoid escalating responses that could impact on the children), managing hazards, remaining with children until uplifted by their caregivers, or taking them to a safe place to await collection and communication with parents until they arrived. Supporting children’s learning referred to planning for an adaptive post-quake environment that included development of a revised curriculum responsive to the needs of the learners, creative use of ICT to support learning at school, home and in other temporary facilities, flexible arrangement of timetables, and collaborating with other learning institutions. Supporting staff and families was concerned with maintaining a focus on people throughout the crisis and this included identifying the most at-risk within the community and having procedures in place to provide assistance and welcoming the community into the school and using it as a community hub. Managing ongoing anxiety was concerned with the ways that were developed to alleviate anxiety in children and included altered routines, new policies implementation and consultants being contracted to address ongoing anxiety and stress within the school community. Additional information was gathered from schools and

early childhood centres and detailed as advice for other schools and centres should they need it in the future.

The Education Review Office study (2013) was a collection of anecdotal accounts and it was never intended to be a robust scientific study or systematic evaluation study. It was a report purporting to provide information about how the educational personnel managed the immediate and ongoing circumstances. It did provide valuable insight into the issues faced but most comments were from the principals and relatively few anecdotes were from the classroom teachers who had to manage the burdens on the days. The study adopted a very positive focus, and provided some valuable feedback but it lacked a critical analysis and did not outline any problematic issues, which were encountered and unresolved.

Mutch (2013) adopted a participatory approach in gathering New Zealand schools' earthquake stories. Individual schools had choice and control of their submission and collectively each created a tangible end-product which represented the experience of each as related by the principals, teachers, students and families concerned. Three schools submissions were discussed as case studies, with approximately 100 participants in total. Mutch found the submissions provided an opportunity for children who were not severely impacted by the experience to express and process their emotions and to encourage them to see the experience in a broader sense. Additionally, the importance of active participation by children in post disaster research, which concerns them, was a unique value of the study. While children are often cited as being at risk of negative impacts post-disaster, they are less commonly invited to participate in research. Mutch and Marlowe (2013) also conducted a study into other community groups whose voices would not ordinarily be heard. Using video and audio interviews, observations, document analysis and questionnaires the experiences of

medical staff, schools, women, children and refugees were gathered. Themes identified suggested the accounts of response and recovery was not dissimilar to those observed following Hurricane Katrina and the Australian Bushfires. Important factors contributing to recovery were bonding among community groups and adaptation to leadership throughout the management of crisis situations.

Both of the aforementioned studies highlight important factors concerning groups whose voice would not ordinarily be heard. While children are often cited as being at risk of negative impacts following a disaster, they are often not included in research, and even-less- so are children who survive a traumatic experience but are not severely impacted. Similarly, the groups studied are frequently cited as being placed at increased risk of post-traumatic symptomology. While these studies offer a significant contribution to the post-disaster body of research in Christchurch, and provide a unique historical record of the participants' experiences, there was limited focus on teachers and minimal investigation of subsequent impact upon professional performance.

A quantitative study (Kuntz, Naswall & Bockett, 2013) which described the post-disaster school environment from teachers' perspectives was undertaken via a University of Canterbury online survey. It identified burnout (feeling exhausted and overwhelmed by the demands and expectations of the position) to be widespread among teachers following the earthquakes via data gathered from 125 teachers in 29 schools, 2 years after the February 2011 earthquake. Increased burnout was perceived to be related to school unresponsiveness, impact on school facilities and teaching, and perceptions of role overload. Emotional exhaustion was the most common type of burnout experienced and many teachers felt that the quality of teaching had decreased, while the work, pastoral care, and administrative task

demands had increased. Teachers reported more frequent and longer absences from work and higher levels of intention to leave the profession. Teachers who felt their school had provided adequate post disaster support had lower levels of burnout, however, a number of teachers reported that the support systems were mostly student-directed and did not address the changed post-disaster working environment that teachers faced. Poor workload, communication, support and safety procedure management were all contributing factors to teachers appraising their schools response negatively. Teachers who felt they had a positive work environment including supportive relationships with colleagues were more likely to view the earthquakes as an opportunity for growth and challenge. It was concluded that support to alleviate role conflict and over-load should be implemented in such situations and more general school responsiveness to the needs of the teacher was warranted. It was not known the extent to which the burnout from the impact of the earthquake could be divorced from ongoing burnout experienced by many teachers performing their normal duties, nor could it be separated from general stress associated with living in a post-disaster environment.

Kuntz, Naswall and Bockett's study was an important undertaking regarding the Christchurch 2010 and 2011 earthquakes, as it was to date the only in-depth investigation of teachers' perceptions about burnout and their attitudes following a disaster. A scientific study using the Maslach Burnout Inventory (Maslach & Jackson, 1986) provided insight into the additional demands placed on teachers and their reactions and outlines negative appraisal of how schools managed the post-disaster workplace. But while the study was important, it assessed teacher burnout occurrence and severity, and did not focus on teacher report of their subsequent performance. While causative links have been made between burnout and impaired

work performance (Abdullah, 2011; Kwag & Kim, 2009) this has not been extended to teachers.

This literature review provides insight into the impact of a natural disaster on individuals and moves to examining the impact on teacher performance. Every person will experience stress in their lifetime and most will not be adversely affected, however when an individual is unable to cope with the level of stress they experience they may develop ASD or PTSD. Accordingly, there has been an examination of the literature on teacher responsibilities and the motivation to perform, stress, coping, psychological trauma, occupational stress and studies examining the impact of trauma events on individuals. These studies indicate that high-risk occupation groups do have higher incidence of stress responses but that the training may alleviate some of the impact of the trauma. Studies suggest ASD and PTSD are the most common psychological condition following maladjustment after a large-scale disaster. First responders are at risk of developing ASD or PTSD symptoms due to their chances of encountering a traumatic event in the workplace and individuals who find themselves in the position of first responder by coincidence are even more so at risk of developing negative psychological conditions, due to their lack of formal training. There is little research concerning measurement of professional performance following a disaster however, the studies that have examined this issue suggested psychological impacts felt by survivors do impact upon workers levels of satisfaction, happiness and burnout.

As indicated by the literature, although there are numerous studies examining the impact of natural disasters on people, overall there has been only limited research on teacher response to being involved in a natural disaster such as an earthquake and the impact upon professional performance. Accordingly, this study will address the issue and specifically

examine how teachers perceived their job performance to be impacted upon by the earthquakes. Examining the impact upon professional relationships, the provision of a safe learning environment, teachers' additional responsibilities and professional development and assessment of learners and teacher practice would provide an insight into teacher responses to the trauma. Although a few studies have been undertaken exploring teachers' professional responses to the earthquakes, this study is somewhat unique as it adopts a mainly qualitative approach using surveys and focus groups to explore teachers' perceptions of the impact on professional performance. There is little research in this area and it was envisaged that this study would contribute to the international literature on teachers' response to trauma.

CHAPTER 3: METHODOLOGY

The following chapter outlines the methodology used to carry out research concerned with how teachers perceive the 2010 and 2011 earthquakes impacted their professional performance. A brief outline of the research design is followed by the objectives of the study, the research process and sites, sample procedures, participants, instrumentation, data collection and analysis and ethical procedures carried out to complete the study.

Research Design

This study used a survey design utilised a written questionnaire and focus groups to gain teachers perceptions of how their performance had been impacted by the earthquakes of 2010 and 2011. Data gathered from the Likert scale questionnaire was a mix of qualitative and quantitative information. By combining qualitative and quantitative research an increased understanding and depth of information can be achieved, results can be corroborated and the weaknesses of the individual designs can be minimised (Foodrisc, 2014). Descriptive statistics were calculated from the questionnaire data. As Milne (1999) and Rea and Parker (2012) have noted questionnaires are useful because they are practical, objective, able to gather information quickly and easily analysed. Furthermore, it was a valuable methodological triangulation procedure to use with the focus group data. Data gathered from the focus groups was qualitative. According to Mariampolski (2001) qualitative research explores phenomena using a more holistic approach than quantitative research and allows more in depth investigation of emotions and motivation. The nature of the responses, regarding a traumatic experience, expected from teachers led to the decision to utilise this approach. Powell, Single and Lloyd (1996) suggest the use of focus groups allows for the gathering of multiple viewpoints on the

same topic. Considering teachers existing time constraints, a group interview appeared to be most useful.

Research Objectives

The purpose of this study was to explore to what extent primary (elementary) school teachers in the eastern suburbs of Christchurch, New Zealand, perceived their professional performance to be negatively, neutrally or positively impacted by the 2010 and 2011 earthquakes in Canterbury. Performance was self-assessed against the New Zealand Teachers Council Registered Teachers Criteria (2010) and teachers were required to assess to what extent, either positively, negatively or neutrally, the following areas had been affected:

- establishing and maintain effective professional relationships focused on the learning and well-being of ākonga/learners
- demonstrating commitment to promoting the well-being of all ākonga/learners
- demonstrating commitment to bicultural partnership in Aotearoa New Zealand
- demonstrating commitment to ongoing professional learning and development of personal professional practice
- showing leadership that contributes to effective teaching and learning
- conceptualising, planning and implementing an appropriate learning programme
- promoting a collaborative, inclusive and supportive learning environment
- demonstrating in practice their knowledge and understanding of how ākonga/learners learn
- responding effectively to the diverse language and cultural experiences, and the varied strengths, interests and needs of individuals and groups of ākonga/learners
- working effectively within the bicultural context of Aotearoa New Zealand

- analysing and appropriately using assessment information, which has been gathered formally and informally
- using critical inquiry and problem-solving effectively in their professional practice

Research Process

The research process involved the following steps:

1. Literature Survey

Literature on the following topics was consulted: impact of natural disasters on individuals and groups, organisational performance literature, stress response, psychological trauma, coping, teacher behaviour and, as it developed, literature concerning the Canterbury earthquakes.

2. Research Objective Development

Based upon the literature consulted, a paucity of information was apparent regarding teachers experiences of disasters and how their performance may be impacted by such an experience.

3. Questionnaire Development

A questionnaire that was both relevant and useful was required for this study. The New Zealand Teachers Council Registered Teacher Criteria was utilised to develop a relevant survey for teachers, being written ensured it was useful to as teachers were able to complete it at their own pace and location.

4. School Selection

Year 1-8 schools in the eastern suburbs of Christchurch were considered for the study. Schools affected by the Greater Christchurch Education Renewal Plan were not

considered for inclusion. Consideration was given to age level taught, character, decile², and whether the school had remained on site following the earthquakes or had relocated.

5. Invitations to participate sent to Principals of 10 schools

Principals were contacted by email to request permission for teaching staff to participate.

6. Questionnaire Delivery

Questionnaires were hand delivered to schools, and self-addressed prepaid envelopes were provided for teachers to return questionnaires after completion.

7. Focus Groups Conducted

Focus groups were held at schools with focus group participants to further discuss themes that emerged from the written questionnaire.

Research Settings

Teachers completed the questionnaires in their own time and returned these when they were complete via post. Focus groups were held at three of the schools where participants were employed. The first and second focus groups were held at temporary sites where 2 schools had resided since both having to close and relocate. The final focus group was held at the site of a school that was not required to relocate.

² A school's decile rating indicates the extent to which it draws its students from the varying socioeconomic communities. Decile 1 schools are the 10% of schools with the highest proportion of students from low socio-economic communities, whereas decile 10 schools are the 10% of schools with the lowest proportion of these students.

Schools and Participants

From selected schools, a classification was applied as to the schools year level taught (primary – year 1 to 8, contributing – years 1 to 6, or intermediate – years 7 and 8), decileⁱ (low – 1,2,3, medium – 4,5,6,7, high – 8,9,10), whether the school was state funded or an integrated/special character school, and whether the school had remained on site after the earthquakes or had relocated. 10 schools which came from a range of the above classifications were approached to participate in order to achieve a range of responses. Emails were sent to principals outlining the research and requesting for participants. Of the 10 schools, 2 principals declined the offer to participate, 1 did not respond and 7 principals agreed to their staff participating.

One hundred questionnaires were delivered to 7 schools. Four schools allowed the researcher to discuss the research with staff and personally invite teachers to participate in staff meetings, and 3 requested that questionnaires be left at the school office. Questionnaires contained a prepaid addressed return envelope, and a form for participants to opt in to the focus group if they wished.

Thirty-nine participants completed (39% of delivered questionnaires) and returned questionnaires from 6 schools. Twenty-eight participants were female and 11 were male. One participant was under 25 years old, 10 were between 26-35, 2 were 36-45, 9 were 46-55, 10 were 56-65 and 7 were older than 65. 25 participants identified as pakeha/European, 1 Pasifika, 1 Māori and 1 other (not specified). Participants combined years of being fully registered teachers equated to 569.5 years with an average of 14.6 years. Seven participants had been fully registered for 5 years or less, 10 for 6-10 years, 7 for 11-15, 6 for 16-20, 2 for 21-25 and 7 had been fully registered for more than 25 years.

Questionnaire

The written survey (Refer appendix IV) collected data on the following: demographic information (age, gender, ethnicity and number of years as registered teacher, whereabouts and what doing at the time of the two earthquakes and name, email address and school if they wished to participate in a follow up focus group. The performance assessment questions were developed by utilising the measure by which New Zealand teacher registration is assessed by the New Zealand Teachers Council (2010) Registered Teacher Criteria. Teachers were asked to identify by circling a number between 1 and 5, for each of 2, 10-item questionnaires (scale A: Professional Relationships and Professional Values and scale B: Professional Knowledge in Practice), to what extent their performance had been impacted as a result of the earthquakes. For each question teachers were given the opportunity to provide an elaboration which provided some qualitative data

Focus Groups

Focus group topics were concerned with the main themes that emerged from the initial analysis of the questionnaire data. While set questions were not created, participants were asked to discuss their experience of the initial finding, or if this was *not* the case for them, what their experience was. The researcher also asked follow-up questions when necessary. At the beginning of the focus group interviews, participants were asked if they agreed for it to be recorded and then transcribed. All participants agreed to this procedure. Guidelines on the process for the focus group meeting were given to each participant.

Data Collection

The following details the data that was collected from the questionnaire and the focus group meetings.

Questionnaire survey scale A was concerned with professional relationships and professional values. Questions A1-A4 concerned professional relationships with learners, colleagues, learners' whanau and the wider school community. Question A5 concerned teachers ability to provide a safe (physical and psychological) learning environment. A6 related to teachers ability to provide a culturally sensitive learning environment, while question A7 asked about teachers commitment to the bi-cultural partnership of Aotearoa New Zealand. A8 was concerned with teachers' level of participation in professional development and A9 referred to teachers' contribution to the professional learning community. A10 asked teachers to assess how the earthquakes had impacted their ability to undertake areas of responsibility effectively.

Scale B was concerned with teachers' professional knowledge in practice. Question B1-B3 were concerned with the conceptualisation, planning and implementation of appropriate learning activities. Question B4 referred to teachers' provision of a collaborative, supportive, motivating learning environment for learners, while B5 asked teachers to assess how the earthquakes impacted their ability to apply how learners learn, to practice. B6 was concerned with the modification of teaching approaches to better meet the needs of learners. B7 related to teachers integration of Te Reo Maori into the classroom. B8 and B9 referred to assessment as asked how teachers felt their creation of assessment tasks, gathering, analysis and use of data had been impacted, while B10 asked how teachers ability to problem solve and critically analyse their practice had been affected.

The discussions in the focus groups centred around questions related to:

Positively impacted areas

- Relationships with colleagues, learners, learners families and with the community
- Modification of teaching approaches to meet the needs of individual learners

- Maintaining a collaborative, supportive, motivating learning environment

Negatively impacted areas

- Participation in professional development
- Ability to manage areas of responsibility effectively
- Planning of appropriate learning activities
- Analysis and use of assessment data

The questionnaire data and the focus group data were designed to be complementary and provided a fullness to the responses. Each set of data was obtained relatively easily and did not require an overly demanding response from the teachers. This was purposely designed because teachers are often taxed by survey requests (etc) and because of the nature of the topic it was considered important to adopt a relatively low-key demand. Data was electronically duplicated as it was returned.

Data Analysis

Quantitative data was extracted from the electronic duplicate. Participants' demographic data was tallied and grouped, and the Likert scale questionnaire responses were tallied for frequency, range, average and standard deviation. From the questionnaire data obtained themes were created where 30% or more of respondents identified the impact as being positive or negative in nature. These themes formed the questions for the focus groups.

Qualitative data from the focus groups was analysed using simple thematic analysis (based on Miles, Huberman & Saldana, 2013), procedures whereby:

1. Responses to the focus group questions (and any questionnaire comments that were documented) were read two times.
2. Codes were created from the sense of each statement.

3. Codes that were similar were combined but maintenance of unique meanings maintained in separate codes.
4. Patterns of codes were created.
5. Themes were developed from the patterns.

Validity, Reliability and Trustworthiness

This study was a mixed design but essentially qualitative. Some descriptive statistics (i.e., frequency, percentages) were used to answer, in a broad and summary sense, the research questions but there was no formal reliability or validity assessment undertaken with regard to this data. However, content validity (a measure of the consensus of experts) was assumed because professional performance and its criteria, as defined by the Teachers' Council, were used as the foundation for measuring that concept. For the purpose of this study, professional performance was then operationalised (i.e., the items on the questionnaire) but clustered into two domains: professional relationships and professional values, and professional knowledge in practice. Two teaching colleagues of the researcher were asked to check the items to ensure they represented a 'fair' measure of the concepts – only two minor changes were made following this assessment.

The trustworthiness (quality of the data in representing the meanings of the participants) of the qualitative responses was established by using the ideas of Lincoln and Guba (1985) and consisted of a consideration of four components: credibility, transferability, dependability; and confirmability.

Credibility refers to the compatibility of the reality in the minds of the participants and the ideas attributed to them (Siegle, 2002). In this current study, this was established by:

- triangulation - a number of respondents' views were gathered;

- peer review – a knowledgeable colleague provided feedback on the adequacy of the researcher's perceptions, insights, and analyses; and
- members' checks – the focus group participants were asked to comment on the adequacy of the themes gained from the questionnaire and the researcher's interpretation of these.

The extent to which these outcomes could be applied (to other contexts/other respondents) refers to transferability. Two procedures were adopted:

- thick description – numerous narrative responses of the participants were reported with attention to detail and precision; and
- purposive sampling – participants from selected locations (i.e., the most damaged area of Christchurch) was chosen.

Dependability (ensuring the likelihood of replication with similar participants and contexts) was established by:

- reporting the data gathering process in detail; and
- inquiry audit – a critical colleague knowledgeable about qualitative enquiry undertook an evaluation of the documents and the overall research process to assess the consistency of the reported data.

Confirmability (i.e., the neutrality of findings reflecting the research aims and not the researcher's bias) was established by:

- triangulation (as reported above);
- a disclosure of the researcher's beliefs and position so the framing of the study could be appreciated and understood;
- outlining the limitations of the study; and
- an in-depth methodological description.

Ethical procedures

Application was made to the University of Canterbury Educational Research Human Ethics Committee for ethical approval of this study. The application outlined the intended study objectives, method, likely participants and required submission of the questionnaire, invitation for teacher and principals and information sheets for teachers and principals. Ethical approval was granted 24 June 2013 (2013/32/ERHEC).

The purpose of this research was to gain understanding of the perceptions primary school teachers hold regarding how their professional performance was impacted by the earthquakes of 2010 and 2011 in the Canterbury Region. A written questionnaire where participants could provide qualitative and quantitative data was utilised, and participants were invited to engage in follow up focus groups to further discuss the main findings of the questionnaire. 39 teachers from 6 schools participated. Data from the questionnaire was extracted and categorised as it was returned, while focus groups were recorded, transcribed and coded according to theme. A number of measures were undertaken to enhance validity, reliability and trustworthiness of the method and researcher interpretations.

CHAPTER 4: RESULTS

This research examines the perceived impacts of the Canterbury earthquakes on a sample of eastern suburbs Christchurch teachers. It investigated their perceptions about the effect on their professional performance. Teachers self-assessed on a Likert scale the impacts as either having no impact, mildly positive, significantly positive, mildly negative or significantly negative against the registered teacher criteria. Teachers were able to provide elaborations on their selections, and invited to participate in a follow up focus group. The results below are from the questionnaire scale selections, elaborations on the questionnaires and comments from the focus groups.

Overall, the results indicate that professional relationships with learners, colleagues, whanau and the wider school community were enhanced, whereas participation in professional development and some aspects of assessment were negatively affected. The following thematic table (Table 1) outlines the themes and patterns with a brief description of accompanying codes.

Theme A: Impact on Professional Relationships

One important issue considered in the study related to the impact of the earthquakes on the teachers' professional relationships. This was concerned with teachers' interactions with learners, colleagues, whanau and local community personnel, particularly in relation to the ethical, professional, collaborative, and supportive relationships teachers develop with these individuals. As with all the themes, this arose from the data obtained from the questionnaire and the subsequent focus group meetings. The issue of relatedness appears to have been enhanced by the earthquakes as many teachers indicated that the impact of the earthquakes upon these professional relationships was of a positive nature; however, there were some negative impacts indicated. In Table 1 below, 66% of all responses related to the items

Table 1. *Themes, Patterns and Codes Arising from Qualitative Data*

Themes	Patterns	Codes
Theme A Professional Relationships	Relationships with learners	Empathetic understanding – <i>Compassion, awareness of students' condition</i> Pastoral care – <i>Personal, social, emotional and physical assistance given to students</i> Negative teacher-learner relationship impacts – <i>Undesirable impacts upon relationships with learners</i>
	Relationships with colleagues	Bonding – <i>Developing a deeper respect and understanding</i> Collegial support – <i>Care for fellow workmates</i> Interpersonal awareness – <i>Mindfulness of others' condition</i>
	Relationships with learners whanau	Increased communication – <i>More verbal, electronic (etc) interactions</i> Parental appreciation of teachers – <i>Acknowledgement of teachers' efforts</i> Negative teacher-whanau relationship impacts – <i>Undesirable impacts upon relationships with whanau</i>
	Relationships with the wider school community	Community interactions and participation – <i>Meetings, communication, interaction with individuals and groups in the community</i>
Theme B Professional Responsibilities	Participation in professional development	Reluctance to participate – <i>Hesitancy to be involved</i> Opportunities – <i>Changes to opportunities available/ changes to opportunities so staff could participate</i>
	Contribution to the professional learning community	Additional responsibility – <i>New or added responsibilities as a result of the earthquake</i> Reduced participation and motivation – <i>Hesitancy to be involved and not feeling inclined to do so</i>
	Management of areas of responsibility	Additional work required – <i>New or added workload as a result of the earthquake</i> Resource availability – <i>Obtainability of resources required</i> Personal role conflict – <i>Feelings of conflict: work vs family/other commitments</i>
	Problem solving and critical analysis of practice	Higher level thinking – <i>Metacognition, reflection on personal pedagogy</i>
	Application of pedagogical knowledge	Overall student needs – <i>Assessment of students' needs in their entirety, not simply learning</i>
Theme C Learning Environment	Providing a safe (physical and psychological) learning environment	Physical safety of students needs and emotions – <i>Awareness of students' emotions, need for support, security</i> Personal fears and emotions – <i>Individual worries and feelings</i>
	Providing a collaborative, supportive, motivating learning environment	For students – <i>The learners</i> For colleagues – <i>Workmates</i>
	Planning and implementing appropriate learning activities	Planning flexibility – <i>Changing plans to adapt to learners, context and resource availability</i> Practical-logistical considerations – <i>Safety, travel concerns which impacted on planning</i> Teacher stress – <i>Teacher emotions and feelings having an impact or making planning manageable as a result of</i>
	Modifying teaching approaches to meet the needs of learners	Adjustment of approaches- <i>Teaching in a different manner, style or method</i>
	Creation of assessment tasks and gathering, analysis and use of assessment data	Priority placed on assessment – <i>the perception of the importance of assessment data</i> Data analysis and use – <i>How data was evaluated and used for future planning or disregarded</i>

Table 2.

Frequency of Questionnaire Responses of Teachers' Perception Regarding Impact of Earthquake on their Professional Relationships with Others

	A1 Learners	A2 Colleagues	A3 Whanau	A4 Wider Community
Significantly Negative	1	1	1	-
Mildly Negative	5	5	6	4
No Impact	7	6	6	11
Mildly Positive	17	12	17	20
Significantly Positive	9	15	9	4

on the questionnaire about professional relationships were positive in nature whilst only 14.7% were negative and 19.2% neutral.

In the following sections, a more specific analysis of the quantitative and qualitative data concerning the teachers' professional relationships with learners, colleagues, whanau and the wider community is outlined.

Impact on Professional Relationships with Learners

Most respondents assessed the impact of the earthquakes upon their relationships with learners as being favourable (refer Table 2). Twenty-six respondents indicated either mildly positive (n=17, 43.5%) or significantly positive impact (n=9, 23%), while 7 (18%) said there was no impact. Five teachers (13%) reported a mildly negative impact, while only one (2.5%) identified the earthquakes as having had a significantly negative impact upon their relationships with learners. On analysing the qualitative data, three codes were identified: empathetic understanding, pastoral care and negative impacts on teachers.

Empathetic understanding was a feature described by a number of the teachers. This was concerned with the teachers' enhanced capacity to interpret what their students were

talking about, as well as a closer emotional tie established with others. For example, some of the teachers commented:

I am a little more empathetic after the earthquakes

I became a lot more empathetic, [meaning I adopted a] softer approach

[The earthquakes] gave you a better understanding of the children

I came to understand and know them [the students] more

It was however, more than empathy with some teachers because the development of positive human qualities, such as the depth of the relationship, bonding and sensitivity was noted. These were considered important attributes as they developed to meet the needs of the students and it became a humanising experience for the teachers and contributed to a stronger relationship with them.

The students saw human side of me - I carried a kid out

I had a much greater bond with the children

I became more sensitive and aware of the children's needs

Another relationship difference noted was the wider and deeper care provided by teachers to meet the students' needs. It was akin to pastoral care, implying that some teachers perceived the need for providing additional care and responsiveness toward the students – something that exceeded what was previously provided. Teachers frequently noted that they were concerned to provide for the welfare of the students during this time of crisis, and the following comments by teachers indicate the nature of the relationship that developed.

I had more compassion, care and family knowledge

Children were more trusting of their teachers as they were there for them at the time of crisis

My personal relationships deepened with the learners and this increased my professional relationships

I lost half my class and became very concerned and professional about those remaining

The earthquakes became an event that bonded individuals even though they may not have been together at the time. With one teacher, the pastoral relationship developed because of the similar experiences endured by them.

I think for me I've become more caring about the children. Even though I wasn't with this group of children, I've just become more caring about children in general because they went through something and I went through something and we've got this connection

On the other hand, a number of the teachers believed there were some deleterious impacts that the earthquake had upon their professional role as it affected the stability of their psychological functioning as a professional. A number of them noted that the stress they experienced was a threat to the relationships they had with the students.

At first during the early days when children returned, yes, but later on I was not always as patient

I became a bit less tolerant in some respects, but also more protective

I was probably under stress and had less time and energy to spend as much time with learners as would be ideal

It was hard to focus at times when I needed to be focussed

Such comments were reflecting teachers' awareness of their behaviour and perhaps implying the need to move forward. One teacher, for example, indicated the need to maintain the status quo as a strategy for keeping relationships intact.

I tried to keep a balanced environment[to support my relationships with the students]

The data collected regarding professional relationships with learners indicated that teachers perceived these to be positively enhanced with teachers reporting an increased support, understanding, empathy and care for students. Although most reported positive impacts, a

few outlined that the stress experienced by them had a negative impact upon learner-teacher relationships.

Impact on Professional Relationships with Colleagues

Most respondents also identified the impact upon collegial relationships as being of a positive nature, (refer Table 2) with 27 respondents choosing mildly positive (n=12, 31%) or significantly positive (n=15, 38%) impacts. Six (15%) outlined there was no impact, 5 (13%) reported a mildly negative impact, while only 1 (2.5%) reported a significantly negative impact upon their professional relationships with colleagues. In terms of qualitative responses, the following key ideas were identified about relationships with colleagues: bonding, collegial support and interpersonal awareness.

The establishment of a closer bond between colleagues was reported by a number of the teachers. A more physical and family-like relationship developed and impacted positively, not only as a source of personal support but also assisted the professional relationship.

We were drawn closer together which led to better professional relationships

We became closer, more physical e.g., hugged a lot and small trivial matters weren't there anymore

We are closer - a sense of family. I talked to lots of colleagues, it has enhanced relationships

We met a lot off site and we hugged a lot and we asked each other how we were, were still doing that, everyone's checking in with each other

This bonding went further than emotional support as there was a strong sense of actual collegial support in terms of caring and sharing. For example, three teachers commented:

We were hugely supportive of each other faced with adversity

The staff banded together and looked out for each other

On the day that the earthquake hit in February, it was the way that the team came together... Just the sharing of the resources and stuff as well. I think it gave everybody a huge sense of were actually together and that's really big

Nevertheless, at times the bonds became strained by the circumstances. For example, one teacher was annoyed because he was required to share his classroom and resources with another teacher whilst another was troubled that his colleagues did not appreciate his personal loss.

It was negative relationship with one colleague because of the shared teaching environment

My colleagues were unaware of physical toll of damage to my home, their damage was minor in comparison

Overall, however many of the teachers agreed, there was a growth of interpersonal awareness because they had experienced the events together - the earthquakes promoted more caring relationships which facilitated personal and professional needs. As two teachers noted:

I was more aware, sensitive and supportive to the staff

I became more aware of their needs at school and at home

The data collected on the impact of the earthquakes on professional relationships with colleagues revealed that most teachers perceived the effects as positive. Teachers reported closer bonds with colleagues, a more supportive workplace and having a greater sense of understanding and awareness of co-workers. Some reported however, that bonds were strained with colleagues as changes in personal and professional circumstances led to frustration and feelings of misunderstanding when their needs were thwarted.

Impact on Professional Relationships with Whanau

Most respondents reported the impact upon relationships with whanau as being positive (refer Table 2). Twenty-six respondents indicated mildly positive impact (n=17, 43.5%) or significantly positive (n=9, 23%) with 6 (15%) reporting no impact. Seven

responded that the impact had been negative by nominating mildly negative (n=6, 15%) or significantly negative (n=1, 2.5%). When the teachers discussed their professional relationships with the whanau of the students, a number of common positive issues were identified including increased communication and parental appreciation of teachers. Some, however, noted the development of negative whanau relationship impacts.

Increased communication, either face-to-face, via telephone or emails, with the whanau was perceived by a number of the teachers to have enriched the relationship. As a couple of the teachers noted:

There was more communication, sharing and a better understanding of individuals

I always had that relationship..... [pre-earthquakes].....but I made a point of contacting all the families

Because of the increased communication, some teachers noted they became more aware of particular student and family needs. This information provided teachers with background information about the family's situation and the impact of the earthquakes and enabled them to better plan and meet the needs of the students.

I came to know their circumstances, whether they were red zoned etc.

You did ring them and talk to them about what they had been through and you became aware very quickly of the impact

Because of the increased communications, sharing of experiences and the expressed concern for the families and students a different relationship began to evolve. A strong bonding developed that promoted not only learning support for the students but also enhanced psychological bonding and even practical assistance occurred. It was a development similar to what had occurred between teachers - there was a facilitation of intensity of relationship.

I developed strong bonds with families, with lots of talking, listening, offering support, and reassurance

I think back to that parents that I had with that class during the earthquakes and we've got a special bond now they helped me move classrooms so many times and we just catch up and talk a lot and you know, just through that time we were emailing quite a bit and having to ring them on the phone quite a bit and yeah they're quite special now

It definitely was positive with us. It definitely built a stronger rapport with parents; they knew you as a person and I guess from there we've had a much closer stronger bond

Because of the care and concern role, the teachers played post-earthquakes, it was reported by a number of them that the parents became more appreciative of their competencies to deal with the difficult situation and the need to be flexible. Many of the parents noted, that the teachers had exceeded their role expectations and at the time of crises and following; the children had been very well cared for.

The whanau were appreciative of actions above and beyond a teachers role, this resulted in good communication

I received many grateful positive comments that we went above and beyond

Parents were lot more supportive. They had a recognition that we care and love their children not just teach them

From the data collected on the impact of the earthquakes upon professional relationships with learners' whanau, the effects appear to be predominantly positive. Teachers reported increased communication with and understanding of family circumstances, closer bonds with whanau and from this, and an enhanced sense of appreciation of the teachers actions.

Impact on Professional Relationships within the Wider School Community

Twenty-four respondents identified the impact upon relationships within the wider school community as being positive (refer Table 2). Twenty respondents reported mildly positive impact (51%), while 4 reported significantly positive impact (10%). Eleven (28%) reported no impact, while 4 (10%) reported a mildly negative impact. No participants reported a significantly negative impact upon their professional relationships within the wider

school community. The qualitative data collected on the professional relationships within the wider school community identified one code: community interactions and participation, which was concerned with the interaction, communication and participation of teachers within the school-community.

Schools exist in a community and teachers have roles to play and often interact within that community. Because of the earthquakes however, it was noted by the teachers that engagement with the community increased and strengthened and largely this was regarded as positive. Teachers commented about how communication improved the relationships with other community organisations. Four teachers commented:

Connections with the early childhood centres probably strengthened as we were looking at the possibility of when we return to be on site with them as well

Working with our cluster schools, relationships were improved, even though it was forced, we were forced onto their site it was a positive, they didn't look at us in a negative way they looked at it that it was an experience

Relationships improved through meetings, casual meetings in the community, there was more talk with strangers

We weren't allowed back it was really hard, and then we did come back, it had, we had quite a lot of the community like the PTA came and stuff and helped which meant that staff mixed with them differently to what we would have done

Needless to say, teachers' perceptions of teacher-community relationships were not all positive as the extra community involvement was a time commitment and this was at a time when teachers' responsibilities were extended already.

I had less time and energy to do the extra things around and after school that I otherwise might have had.....my job and own situation needed attention

Professional relationships within the wider school community were perceived by teachers as being predominantly positively impacted. Teachers reported enhanced relationships as a result of an increase in communication through community meetings and working together.

Despite this however, some teachers outlined that due to other issues the contribution to the wider school community was not as much as prior to the earthquakes.

Overall, the data collected on the impact of the earthquakes on professional relationships with learners, colleagues, learners' whanau and the wider school community suggested that the majority of effects felt were positive. Teachers indicated an increase in empathy and understanding for learners, closer bonds and collegiality with co-workers, enhanced communication and relationships with learners' whanau, and enhanced interaction with the wider school community.

Theme B: Impact on Professional Responsibilities

The impact of the earthquake upon professional responsibilities was another issue identified from the analysis of the data. In this study, professional responsibilities referred to responsibilities of the teacher to professional learning, allocated responsibilities and critical reflection on practice. Areas identified in the data analysis as being important were participation in professional development, contributions to professional learning community, managing responsibilities and reflection of practice and application of pedagogical knowledge.

Over half of participants perceived there was no impact upon their professional responsibilities with 99 (50%) of the total 195 responses being neutral. Those that did indicate an impact identified it as being more negative (N=57, 29%) rather than positive (N=39, 20%). Participation in professional development contained the highest frequency of most negatively impacted responses. Refer to Table 3 for the detailed frequencies.

Table 3

Frequency of Questionnaire Responses of Teachers' Perception Regarding Impact of Earthquake on their Professional Responsibilities

	A8 Professional Development	A9 Professional Learning Community	A10 Areas of Responsibility	B5 Critical Analysis of Practice	B10 Application of Pedagogical Knowledge
Significantly Negative	5	1	1	1	-
Mildly Negative	16	7	12	5	9
No Impact	17	23	14	24	21
Mildly Positive	1	5	10	8	9
Significantly Positive	-	3	2	1	-

Impact on Participation in Professional Development

It was noted that the earthquake had a negative impact upon professional development engagement. Twenty-one (54%) participants reported a negative impact upon their participation in professional development with 16 (41%) reporting mildly negative and 5 (13%) experiencing significantly negative impacts. Seventeen (43.5%) reported there had been no impact while 1 participant (2.5%) reported there had been a mildly positive impact. No respondents identified a significantly positive impact upon their participation in professional development. Refer to Table 3

Two codes were recognised as important for the teacher professional development pattern: the first of these related to professional development reluctance and the second, limited/changed opportunities. Reluctance or resistance referred to the teachers' unwillingness to engage in professional development opportunities as it was not considered a priority at this time. Furthermore, there were limited/changed opportunities because of the lack of suitable venues and courses on offer at the time. It was noted that accommodations

needed to be made to ensure some professional development was made available to teachers however.

Professional development participation was considered relatively unimportant following the earthquakes. For many teachers, it was sufficient to manage the class and deal with the students' and own stress. Many teachers commented that they were reluctant to participate because they simply didn't want to leave the class.

I was really reluctant to be away from class

No, I was not keen to be away from my own kids

I didn't care for it following immediately after the quakes – It was not a priority to being a good teacher

You're concerned about your children, you're focused on your children and everybody's wellbeing. You're just not in that headspace, to be able to give any PD any credit; it was more of a case of surviving

One teacher managed to see some positive aspects to the earthquake because she considered it to be an educative experience in its own right. It was seen as being a 'good teacher' and surpassed the need for any professional development opportunities

It didn't matter. Professional development in those times it wasn't important and to be perfectly fair, I personally feel the experiences I've had over the past 3 years will stand me in good stead for anything I do in the future, as a teacher or as a principal, than any course would. Cos I certainly found out a lot about myself, so yeah...I certainly don't think anybody was looking for it anyway

Obviously, the earthquakes disrupted the normal routines and professional development opportunities were significantly reduced. Many facilities and venues were not available and professional development staff were making their own adjustments and attending to their own needs.

Opportunities were reduced after the 2011 earthquake; I have definitely completed much less PD in the last two years

A lot of providers of PD were closed were shut down anyway so even if you'd wanted you'd be struggling

There was much less available, and it was much further to travel, we just did in-house stuff instead

However, not all professional development ceased and some adjustments were made to ensure that it did occur. Some professional development arose more spontaneously within schools, although it may have been a piece-meal approach.

We had a number of terms we didn't work full terms for one reason or another but we still, things still kept moving, we still developed anyway, we did some PD amongst ourselves cos we had teacher only days and we yeah, I wouldn't see that as having a negative impact on us

We did bits and pieces, like we still did everything, but maybe not quite as much or well, because people were obviously lacking energy and time

From the data collected on the impact of the earthquakes on teachers' participation in professional development, the overall perception was that the effects were negative in nature. Teachers reported a decrease in participation due to their reluctance to participate, and to the lack of opportunities available. Nevertheless, while most teachers indicated that professional development was not a high priority, some stated that they made changes to make it more achievable for staff to participate.

Impact on Teachers Contribution to the Professional Learning Community

Some data was collected on activities relating to learning communities. In this case a professional learning community was about teachers actively contributing by collaborating and cooperating with other professionals on matters relating to teaching-learning. Twenty-three respondents (59%) reported there had been no impact to their contribution to the professional learning community, while the remaining 16 were equally divided on whether the impact was positive or negative (mildly positive=5, 13%, significantly positive=3, 8%, mildly negative=7, 18%, significantly negative=1, 2.5%) (Refer to Table 3). The

questionnaire and focus group data indicated that additional responsibility (which refers to the extra input required of teachers as a result of the circumstances) was identified as one of the considerations and another the reduced participation and motivation of teachers.

It was noted by a number of the teachers that their competency to cope led to extra responsibilities being placed upon them to help people cope with the earthquakes. Not only was this to care for their colleagues but also to assist the students' families.

Everyone had to step up a bit, the families and children looked for guidance, and support

Within school I did a lot.. [extra].. with supporting staff with online communication

I played a team player role; I understood that we all needed to support each other

Some teachers however were not able to respond in this manner and commented that their participation and motivation had decreased and involvement in activities beyond teaching the students was problematic for them. A number mentioned that their motivation to even engage in the usual activities was reduced for example, attendance at after school meetings.

I lost interest in being an associate teacher

I was not keen to be away from my own kids, I wanted to be at home when I was not teaching, not at a meeting about the maths curriculum

My usual display in the hall was minimal and I felt not up to my usual standard

In summary, it was noticeable that some teachers perceived there to be a mix of impacts upon their contribution to the professional learning community. Some reported an increase in behaviour contributing to the professional learning community, whereas others reported a decrease in motivation and engagement.

Ability to Undertake Areas of Responsibility Effectively

The ability to undertake responsibility effectively was discussed by a number of the participants. Responses were mixed, with 14 (36%) respondents reporting there had been no

impact upon their ability to undertake areas of responsibility effectively, while 12 (30%) reported a positive impact and 13 (33%) reported a negative impact. The qualitative data indicated three prominent issues: additional work required, resource availability, and personal role conflict. Additional work required referred to the additional practical tasks that teachers were required to undertake, resource availability was mainly about the lack of resources and facilities, and role conflict referred to the multiplicity of roles that the teachers had – for their role was not only a professional role; but also a parent/partner/caregiver etc.

Following the earthquake there was considerable disruption and reorganisation. This meant that teachers had to assume additional/different roles and responsibilities, which further stretched their capabilities. The competencies of the teachers were utilised to help out and provide necessary assistance.

I took on more staff leadership responsibility

Some people had big areas like Fred who had to set up a whole new technical system on this site like with computers and Wi-Fi andYou know that was a huge weight on their shoulders to redo all that

As a syndicate leader it was a big job, because you had to make sure that you're ok and your teams ok. And sometimes, it's quite hard... you had to keep an eye on it, when you had to communicate with people and give people a break

But, many teachers commented that along with the additional work required, their area of responsibility was made more difficult by the lack of resources and facilities available. This exacerbated the problems that already existed but they had to cope.

Our own systems were affected, like we were relocated so you haven't got the resources at your fingertips and with no email that impacts on people's ability to communicate

It was much harder to order new books and equipment

Some things you just couldn't do. We had no resources or very few, plus not a lot of space to work with

I found it really hard to get artists to come to school, to perform in our school

Sports and physical education activities were sorely affected and some of the teachers were concerned about the lack of opportunities for the students. Travel was problematic, some equipment was not available and at the time it seemed that physical education was an extravagance.

Extracurricular sport and things like that just stopped so that's quite negative. It just wasn't feasible to travel

The earthquakes impacted on us in terms of PE and sport, there was no facilities to hold events

Not only did teachers find the logistics of managing areas of responsibility effectively difficult and challenging, issues in their personal lives impacted upon their ability to commit to the extra responsibilities. For some there was a role conflict - often between competing home and school responsibilities.

Some staff were away for a little bit longer than others, different people had different needs so you couldn't expect things of people unless they're there from that Monday to Friday block. People were still returning a bit later

Immediately after the Feb EQ I didn't support the leadership team sufficiently/adequately as I was also dealing with my elderly dependent mother and needed to get out of Chch

The data collected on the impact of the earthquakes concerning teachers' management of their areas of responsibility provided a mix of responses. Some teachers indicated that the earthquakes increased their responsibilities while others outlined the challenging difficulties faced in managing these areas by the change in circumstances.

Impact upon Problem Solving and Critical Analysis of Practice

Most respondents reported there being no impact upon their ability to problem solves and critically analyse their practice following the earthquakes. Twenty four (61.5%) said there was no impact, while 9 (23%) said there had been a positive impact (mild=8, 20.5%, significant=1, 2.5%) and 6 (15%) reported as experiencing a negative impact (mild=5, 13%,

significant=1, 2.5%). While the quantitative data suggested there was for the most part, no impact, teachers disclosed that the earthquakes were an impetus for engaging in critical and deep thinking. Some believed it afforded a chance to rethink and refine their activities, whilst on the other hand some believed it minimized the opportunities to engage in such thinking.

No, it [the impact] was positive because it gave me a chance to modify these parts of my practice, I've learnt to do things in different ways

Certainly needed to be sharper with everything else going on around me

At the time, you really didn't have much spare time to reflect on practice, especially if home was disrupted too

As indicated, teachers' responses were mixed with regard to the impact on their problem solving and critical analysis of practice as there variations in perceptions about how the earthquakes influenced their capacity to engage in reflective practice. While some believed it gave the opportunity to reflect, others outlined the lack of opportunity the circumstances provided.

Impact upon the Application of Pedagogical Knowledge

This issue was concerned with the teachers' application of pedagogical knowledge in the context of the post-earthquake environment. Over half of the respondents reported the earthquakes as having no impact upon their ability apply pedagogical knowledge to practice. Twenty-one (54%) said there was no impact, while 9 (23%) said the impact was mildly negative and 9 (23%) said the impact was mildly positive. While participants who had identified an impact were divided on whether it was negative or positive, what seemed to happen was that there were many teachers who went beyond learning needs assessment and emphasised the needs of the whole student. It meant that during the teaching time, teachers observed some very traumatised students and needed to incorporate the implications of this, in the teaching-learning process.

Meeting the overall needs of a student assumed considerably more importance for many of these teachers. The earthquake stressed many students and the teachers' response became crucial in assisting them to cope in the classroom learning programme.

I had to think about the effect of the earthquakes on the children and how that would affect their learning

I became much more sensitive to children's fears when considering activities

I had a higher focus to meet needs of my children who now presented many more issues and problems. There were barriers to their learning compared to prior earthquakes where there were none

I had to think outside the box many times more than prior to the earthquakes due to our dislocation

The significant finding in this area was that the data collected on the teachers perceptions about how the earthquakes impacted their ability to apply pedagogical knowledge to practice, indicated minimal influence. However those that did report an impact noted that working with the 'whole' student provided a strategy for ensuring pedagogical knowledge was utilised. For example, in assessing learning needs when the holistic approach was adopted, it was a more meaningful exercise as the student's status (emotions, etc) could be taken into consideration.

It has been indicated in the above discussion that teachers' perceptions on how the earthquakes impacted their professional responsibilities were generally neutral but it was clear that engagement in professional development was resisted. Teachers felt that professional development was not important to them during the time of crisis and that there were fewer opportunities in any event. Responses were mixed for the other areas of professional responsibility, and while most reported there had been no impact, some reported difficulties owing to a lack of resources or change in location, while others reported the earthquake allowed them contribute in new ways and reflect on their practice.

Theme C: Learning Environment

The final theme that arose from the data was the impact upon the learning environment. This referred to the impact of the earthquakes upon the safety of the teaching and learning setting, the collaborative, supportive, motivating teaching-learning context, and the planning and implementation of teaching and assessment. Refer to Table 4..

Table 4.

Frequency of Questionnaire Responses of Teachers' Perception Regarding Impact of Earthquake on the Learning Environment.

	A5 Safe Learning Environment	A6 Cultural Sensitivity	A7 Bicultural Partnership	B1, B2 & B3 Planning	B4 Collaborative supportive motivating environment	B6 Modifying teaching approaches	B7 Integrating Te Reo	B8 Creation of assessme- nt tasks/ gathering of data	B9 Analysis / use of assess- ment data
Significantly Negative	4	1	1	3	-	1	-	1	2
Mildly Negative	8	1	1	10	7	8	3	9	10
No Impact	5	29	33	19	13	11	32	23	23
Mildly Positive	14	7	4	6	14	15	3	6	4
Significantly Positive	8	1	-	1	5	4	1	-	-

Most teachers did not perceive there to be a significant impact upon the learning environment with 208 (53%) responses from an available 390 indicating no impact, 82 (21%) responses were of a negative nature, whilst 100 (26%) were positive. The patterns with the least impact identified were concerned with cultural sensitivity (74% no impact), commitment to the bi-cultural partnership of Aotearoa (84% no impact) and integrating Te Reo into the classroom (82% no impact). The respondents made no comments about these aspects and accordingly no further consideration was given to these issues in this results section.

Providing a Safe (physical and psychological) Learning Environment

Twenty-two respondents identified the impact of the earthquakes as having a positive influence upon the nature of the learning environment in terms of its physical and psychological safety. Fourteen (36%) of these reported a mildly positive impact, while 8 (20.5%) reported a significantly positive impact. Five participants (13%) stated that there was no impact, while 8 (20.5%) reported a mildly negative influence and 4 (10%) noted a significantly negative impact upon their provision of a safe learning environment.

Although most teachers reported no impact, there were a number of suggestions from other teachers about what constituted noticeable impacts to them. These codes were related to: physical safety of students' needs and emotions and personal fears and emotions.

Teachers commented that a 'safe learning environment' encompassing the physical and psychological aspects were important but, not surprisingly, the physical aspect over-rode many other issues. It was clear in their thinking that this was a priority.

I always had this as a priority, but the physical aspect became more of a focus

The worksite was physically challenging

Children were very focussed on the detail for escape, and so we always had to discuss that

Nevertheless, while the teachers did their best to provide a physically safe learning environment, the students' needs and emotions often drove teacher actions and therefore the psychological safety of the students was indicated as being important as well. For example, the recognition that students required routine and stability was discussed by a number of the respondents.

We tried to have pop up schools (relocate onto temporary sites), so school could operate

Children realised that school is a safe place with normal routines still in place

I was more aware of children's sensitivity, security needs and reassurance

The teachers also discussed their personal fears and emotions and the impact these had upon the provision of a safe learning environment.

I felt jumpy, and still do to some extent, I really worried that this came across to the children

I moved classrooms many times and this was unsettling for all of us, the children settled quicker than I did

Most teachers assessed the impact of the earthquakes on the provision of a safe learning environment as being positive. Teachers reported the efforts they went to provide a physically and psychologically safe learning environment for the learners. Some however outlined the stress they were feeling impacted on their perceived ability to do this.

Impact on Providing a Collaborative, Supportive, Motivating Learning Environment

Nineteen respondents reported the earthquakes had a positive impact upon the provision of a collaborative, supportive, motivating learning environment; 14 reported mild (36%) impact and 5 (13%) indicated significantly positive impacts. Thirteen (33%) respondents reported no impact, while 7 (18%) said there was a mildly negative impact. From this analysis, two codes were identified: provision of an effective learning environment for the students and secondly, an effective learning context for colleagues. This was about the maintenance of collaborative, supportive and motivating learning contexts for both groups, one being student centred and the other collegial oriented.

A number of learner-centred issues were raised relating to support of the students and the maintenance of their learning environments.

I placed a big emphasis on a supportive environment, my support of the kids and their support of one another

I think the parents were stunned every time we moved and reopened somewhere else, the first day they were stunned by what classrooms looked like even in the spaces they were in, so kids came back and parents came back and it would look like a school, so from that they were motivated to get back into it

Some teachers also considered collegial support important, and further to this, there were reports of collaboration being extended beyond the normal provisions occurring in the school.

If someone was having a stressful time because of the earthquake there was always someone to support, whether they needed time off or, there was other help

It's definitely maintaining and extending that whole collaborative environment with teaching because we're in such a small space and...you had to sort of send one, one teacher had to go out and do something else and one was in the classroom working with another group

I guess cos we've moved site there is an opportunity for so many new things, so not just doing things the way they've always been done, things have changed and there's a lot of discussion on what we can now do instead

Most respondents assessed the impact upon their provision of a supportive, collaborative and motivating learning environment as being positive in nature. Teachers outlined the ways in which they tried to provide for this in their classrooms, and ways in which the work place was perceived as being collaborative, supportive and motivating.

Impact on Planning and Implementing Appropriate Learning Activities

Most respondents reported there being no impact upon their ability to conceptualise and plan appropriate learning activities as a result of the earthquakes, however some did note impacts. Nineteen (49%) said there was no impact, while 13 (33%) reported experiencing a negative impact (mild=10, 26%, significant=3, 8%) and 7 (18%) said there had been a positive impact (mild=6, 15%, significant=1, 2.5%). A number of interpretive attributes were identified when analysing the questionnaires and focus group data for impact on planning and implementation. These codes were: planning flexibility, practical-logistical considerations and teacher stress. The flexibility of planning and organisation referred to adaptations made

to plans and organisation because of learner issues, the need to accommodate restrictions on timeframes and altered learning environments. Practical and logistical issues were concerned with the inability to carry out previously used or desired plans and teacher stress was referring to the teacher's energy and capability to conceptualise and plan appropriate learning activities.

Additional flexibility was one of the qualities that a number of teachers considered to be important after the earthquakes. Because routines and organisation had been disrupted, this became a priority to maintain teaching sequences, flexibility was founded on the need to accommodate the emotional and personal issues that the students were displaying following the earthquakes.

It made me not put the students in stressful situations

I possibly thought more of the impact on families, both emotionally and financially

Well the way I look at it, we were looking at their emotional wellbeing, but you could have seen it that the learning activities might not have catered to a national standard

Some teachers recognised the need for changed topics and inclusion of informal learning activities.

We taught units on resilience and earthquakes

Really specific learning activities stopped and we did fun activities, for example: loose maths and fun reading

While some recognised the need for more informal learning, other teachers recognised the shortened timeframes as a result of school closures, and they adapted their planning to accommodate.

We were much more focused

There was a definite focus on literacy and numeracy

More focused due to the limited timeframe to complete units

Other comments referred to the changed physical teaching environment as many classrooms and schools were abandoned necessitating different teaching spaces and schools. A number enjoyed that challenge while others found it difficult.

I taught across team level not just class, worked in a team teaching situation, the joining of two classes, there were positive results with sharing planning

Sharing that space too in the hall and how you used it, like how you'd get six classes in there trying to do learning positively

Where I had to work was not satisfactory for what I wanted to do

The uncertainty of the future was also an issue for some.

We also did not know how long we were going to be somewhere...because we thought we might be back on site and those sorts of things. We were quite tentative with planning

But it was more than this – apart from working in different environments there was a range of practical and logistical concerns that needed to be taken into consideration to ensure the teaching and learning proceeded. It was noticeable that the teachers were often making professional decisions, dealing with situations and taking actions that were not the norm.

You sometimes had to work with fewer resources. I had no teacher desk or even table for some time, this made planning harder

The road issues, and escape routes were too hard to sort, staying at school was easier

Yeah, that was shot to shit...once upon a time you filled out your RAMS form, and it was easy now there's like, do you have Nanas contact number? and the parents fifteen cell phones numbers? and Auntys? And everything else ...and have you packed a picnic lunch?

For a number of the teachers, the planning and organisational aspects became problematic because the stress influenced the motivation to undertake tasks. Some found planning time was significantly reduced because of the anxiety about the earthquakes. Energy to engage became problematic.

My energy levels were very low; I was overtired and stressed out

I spent much less time planning, due to other issues like my energy levels and stress

I was mentally exhausted and stressed at times

A number of the teachers who recognised this as an issue, attempted to compensate in a number of ways to ensure the continuation of manageable teaching sequences.

I spent less time than previous years with planning due to stress and earthquake issues, so lots of repeating of previous units

I realised in the early days back at school things such as planning had to be kept manageable and low stress conditions were needed

While most teachers indicated there was no impact upon planning and implementation of appropriate learning activities as a result of the earthquakes, those that did indicate an impact reported it as being negative. Teachers discussed changes required to plans due to a number of factors such as learner emotions, resources, changed teaching spaces, logistical issues and teacher stress.

Impact on Modifying Teaching Approaches to Meet the Needs of Learners

Nineteen (49%) respondents reported the earthquakes had a positive impact upon them in terms of their ability to modify teaching approaches to better meet the needs of learners. Fifteen (38%) of these reported mild impacts and 4 (10%) reported significantly positive impacts. Eleven (28%) respondents reported no impact, while 9 (23%) noted there was a negative impact – 8 (20.5%) indicated mild negative impact and 1 teacher (2.5%) reported a significant impact. Data obtained from the questionnaire and focus groups indicated one key issue- adjustment of teaching approaches. This was related to the modified physical/structural environments and organisation following the earthquakes – the changed teaching timeframes, physical conditions and resources and the socio-emotional status of the students. For example, some teachers discussed the need to be more relaxed and to have a

more flexible easy-going approach in the classroom while others decided they just had to make do. In a number of cases, it was necessary for the teacher to alter their approaches to accommodate the changed circumstances, but it was done.

I was a bit more relaxed in my approach

Others however noted that the changed conditions and restricted time frames impacted upon what could be completed and it was necessary for the teacher to alter their approaches according to the situation.

There just wasn't the flexibility in learning immediately afterwards

Way less time due to stress, pressure and energy levels, it was back to teacher preacher

Well we lost half of the term. So I guess we um there was a stronger focus on what we wanted to teach the children and how we had to deliver it

In terms of classroom space, I just had to modify my teaching so much. You didn't have equipment, you didn't have desks, you know, I've only just got a teacher's desk and I didn't have a teaching table. You still had to meet the needs of learners, but you had to do it in such a creative way because of the lack of what you normally had

Some teachers commented that the circumstances led to an increase or decrease in the student audience, and as a result teaching approaches were altered

Independent plans had to come into play and families were on board, so we used a lot more online activities

Since the role was reduced, I was given more time to work more frequently with individual children

The earthquakes were perceived by most teachers as having had a positive impact upon their modification of teaching approaches to meet the needs of learners. Teachers identified that circumstances arising from the earthquakes, such as relocation, and closure required them to adapt their approaches.

Impact on Creation of Assessment Tasks and Gathering, Analysis and Use of Assessment Data

Most respondents reported the earthquakes had no impact upon their creation of assessment tasks and gathering of assessment data. Twenty-three respondents (59%) stated there was no impact, while 10 (26%) said the impact was negative (mild=9, significant=1) and 6 (15%) reported a mildly positive impact. When the qualitative data was analysed it provided two codes: priority of assessment and use of assessment. Assessment priority referred to the importance that was placed on assessment activities whilst the use was concerned with what followed assessments (e.g., analysis, abandonment of results).

Many of the teachers in the study noted many activities continued as before (with some adjustments). As indicated above, only a few reported in a quantitative sense that the assessment process was impacted upon but the comments received indicated that with many teachers the assessment priority had shifted. This was because the cumulative impact of the earthquakes and the on-going aftershocks altered the teachers' perception about what should be prioritised.

It was not an appropriate time to be assessing

All assessment and data had a lower priority following the earthquakes

In the early days assessment tasks and data had lower priority – it was harder to do so the methods I used were observation mainly

It was hard to complete, there was discontinuity as children left school and later came back

At other times factors which were more important (e.g., relationships with the students) overshadowed the assessment requirements.

Probably have given more emphasis to human relationships in the last two years than being data driven

There was more interest in people's mental health, keeping our school culture alive and well was a priority

Assessment was difficult, the aftershocks unsettled children when assessment was in progress

Teachers' perceptions about the analysis of assessment data was gathered as well. For some, it was minimally undertaken whilst for others attempts were made to continue as normal.

The data wasn't analysed in any great depth bearing in mind the period it was administered in

It was right around the time we had standardised testing and we had some discussion. I remember talking about do we even bother doing them? But then there was that it impacts on future years if you don't

No. Assessment was used the same. We've only got two years at intermediate - we really need to see what's going on. We used whatever we've got. It was business as usual, it had to be

Most teachers reported there being no impact upon the creation of assessment tasks and gathering, analysis and use of assessment data, however those that did recognise an impact viewed it as negative. Teachers outlined that their priority for assessment shifted and the difficulties they faced in attempting to administer assessment, even if they had felt it was a priority. While many reported the assessment as not being a priority to them, some recognised the long term need for the assessment to occur regardless.

While the quantitative data indicated most teachers believed there was no impact upon the learning environment, the qualitative data provided some interesting insights. Teachers reported the earthquakes as enhancing their provision of a safe learning environment and a collaborative, supportive, motivating learning environment and workplace. Many teachers demonstrated their decision-making capabilities when outlining the adaptations and modifications they made to planning, implementation, approaches and assessment to accommodate the learners, who were often presenting with psychological trauma and the teaching learning-context which was often altered from that prior to the earthquakes.

Summary of Results

This research project was concerned with the perceived impacts of the 2010 and 2011 earthquakes upon eastern suburbs primary teachers' professional performance. The data gathered from the respondents indicated that although there were many who did not perceive there to be any impacts upon their performance, there were a number of teachers who expressed that there were significant impacts upon their performance. With regard to professional relationships, most teachers noted that it had positive impacts, but some did identify that it impacted deleteriously upon the relationships with the learners, colleagues, learners' whanau and the wider community. Another important finding was related to professional responsibilities. Once again, many participants did not perceive that there was an impact, but for some teachers there was a negative impact upon their participation in professional development, management of responsibilities, planning and implementation. A few indicated there were some positive effects. Finally, in the third theme, the learning environment, there were many teachers who did not believe the earthquakes impacted upon the learning environment. However, as with the other themes, there were some teachers who found that there were positive aspects related to the earthquake and some indicated negative impacts which impacted on their role as a teacher.

CHAPTER 5: DISCUSSION

This research project was concerned with the impact of the Canterbury earthquakes of 2010 and 2011 on teachers' professional performance. Teachers self-assessed on a 20-item Likert scale questionnaire to what degree their professional performance was positively or negatively impacted as assessed against the registered teachers' criteria. Teachers were invited to participate in follow up focus groups to discuss the main themes identified in the questionnaire. Quantitative (Likert scale selections) and qualitative data (written elaborations) were obtained from the questionnaire and further qualitative data (verbal comments) was gained from the focus group.

From the data, three themes emerged. Professional relationships were concerned with teachers' engagement and maintenance of ethical, collaborative, supportive relationships with learners, colleague, learners' whanau and the wider school community. The second theme, professional responsibilities related to the responsibilities of the teacher in professional learning, allocated responsibilities and critical reflection on practice. The learning environment theme centres on the safety of the teaching and learning setting, the collaborative, supportive, motivating teaching-learning context, and the planning and implementation of teaching and assessment.

Theme A: Professional Relationships

Professional relationships were perceived to be positively impacted by the earthquakes by most of the teachers. Teachers indicated that relationships with learners, colleagues, learner's whanau and the wider school community were enhanced through developing an increased understanding and empathy for children, improved collegiality in the workplace, an appreciation of family circumstance, and increased communication and participation within the wider school community. Teachers viewed this as a means of coping

with the trauma of the earthquakes as it provided support to them and gave others support. However, some teachers considered that professional relationships were negatively impacted upon.

Although it may seem unusual that at a time of stress, when personal and home issues had to be considered, that professional relationships with others provided a valuable support to cope with the demands of the situation. Schools are however, social places and teachers have been encouraged to work collegially and cooperatively (Jarzabkowski, 2002) and this provided a supportive framework for the professional emotional and social demands following the earthquake. Although it was indicated that some teachers felt that there was no impact upon professional relationships, it is likely that there was a functioning collegiality and support already in place, which simply continued following the earthquake and hence no difference was really detectable. It was noticeable that in the worst affected areas where there was noticeable chaos and disorganisation, the educational and allied agencies in the community had increased communications and participation. This collaboration provided a context for the solution to a number of issues as well.

The noted impact upon the development of professional relationships has been a feature examined in the literature and the findings in this study were somewhat consistent with this research. Teachers reported increased collaboration and communication with colleagues, learner's whanau and the community as a result of the earthquakes. This is in line with Williams and Drury (2009) 'communities of circumstance' whereby strangers found themselves in adverse situations, yet because of the sense of a shared fate and a common goal, could work together and develop bonds. Having a sense of togetherness and relatedness, and being part of a community of circumstance appears to have impacted positively on the professional relationships between teachers, colleagues, learner's whanau and the community and was regarded as very positive outcome from the chaos. This finding is also consistent

with the findings of Mutch and Marlowe (2013) reflecting the importance of community bonding during times of crisis.

With regard to the positive impact on relationships with colleagues and the wider community, Osipow's Occupational Stress Inventory (Revised)(Osipow, 1998) details that one of the six domains 'responsibility' refers to whether an individual possesses a feeling of responsibility for the performance and wellbeing of other employees and colleagues. In this study, teachers felt a sense of responsibility regarding the wellbeing of their colleagues after the earthquakes and, although Osipow suggested this should have increased stress levels, it appears to have served to reduce stress levels by creating a sense of shared circumstance and camaraderie. Teachers' reports of enhanced collegiality and collaboration can also be considered a function of the person-group fit thesis as identified by Kristoff-Brown, Zimmerman and Johnson (2005). Teachers were likely to feel an increased sense of belonging with the collegial group as they were often together as a school group when the earthquakes occurred and therefore shared a common experience and circumstances of the earthquakes. A similar explanation can be offered for the person-organisation fit notion for a heightened sense of community developed within the workplace.

Relationships with learner's whanau were reported to be enhanced as teachers gave and received support from whanau. This was another supportive mechanism that helped teachers cope with the disruptive events – the strength of it was probably enhanced because of its reciprocal nature. Teachers were able to gain additional information about students (and their families) from the whanau and share professional and personal accounts about the student. In turn, this relationship was further cemented by the whanau's expressed appreciation of the teachers' efforts. This is not an uncommon development for as Drury (2011) noted survivors of disasters can develop a shared social identity and expect to give and receive support. Teachers viewed the relationship as reciprocal and valued the support

provided by the whanau which resulted in the teachers perceiving the relationship as being positively impacted.

In the current study, many participants were female and reported strengthened bonds and connections because of the earthquakes. It has been reported in the literature that when stressful events occur, females are more likely than males to adopt an assist and caring role (Taylor, et al. 2000) rather than adopting an aggression or withdrawal role (Cannon, 1915). To some extent then, it may have been an advantage that most of the professionals employed in the schools were female who have been reported as being more inclined to adopt a 'tend and befriend' role as this provides a context more able to cope with disasters. What's more, if this became a *modus operandi* adopted by a number of individuals in schools, it was likely it became a powerful and useful mechanism to navigate through the professional and personal concerns that could be emulated by others. As indicated, many of the participants developed enhanced relationships with learners, colleagues, learner's whanau and the wider school community as a means of coping throughout the crisis.

The supportive relationship developed following the earthquakes amongst teachers and learners, colleagues, learners' whanau and the wider community can also be attributed to the teachers adopting a 'healthy' coping strategy. They demonstrated a resilience. Horney (1939) proposed that 'moving with' refers to developing relationships, communication, compromise and shared decisions was a means of maintaining positive psychological health. Most of the participants when considering the issue of relatedness noted a 'moving with' orientation in that they sought and gave support, communicated more and worked together to create a manageable working situation. According to Horney, this approach provided a healthy context for individuals to ensure they remained centred on reality and yet sufficiently healthy to engage in forward thinking. Little evidence of ASD and PTSD symptoms were reported by teachers however, evidence was found which demonstrated some teachers did

adopt ‘unhealthy’ withdrawal coping strategies such as ‘moving against’ (an aggressive ‘moving away’ orientation) - this manifested itself in some teachers as evidenced by their desire to absent themselves from the school and return home.

The results indicated that most teachers perceived the impact on professional relationships as being positive. The literature has noted that increased communication and bonding can occur amongst individuals after sharing an adverse experience (Williams and Drury, 2009; Mutch & Marlowe, 2013) and can lead to increased cooperation and bonds for some time. The findings of this research were consistent with this as teachers reported enhanced relationships with learners, colleagues, learners’ whanau and the wider school community. As discussed, it is believed this development occurred because of a range of interactive factors. Schools are social places and when the events occurred, a community of circumstance was superimposed on these already existing structures strengthening the support resources for teachers, learners, whanau, etc. The accompanying sense of responsibility was usually managed well even though personal responsibilities were also evident. In many cases it was reported that the support structures proved not only a practical resource but also a meaningful way for the teachers to fit the context and then understand and interpret the events and move forward. The ‘tend and befriend’ orientation promoted this arrangement.

Given that these arrangements support to/from teachers it seems important to understand the underlying psychological mechanism that is operating – this will be discussed in a later section of the discussion.

Theme B: Professional Responsibilities

The second major finding was that teachers perceived there to be a varying levels of impact upon their professional responsibilities. Most teachers identified the earthquakes as having no impact on their performance in the areas of the application of pedagogical

knowledge, or commitment to the professional learning community. Participation in professional development or the desire to participate was perceived to be negatively impacted by most participants; notwithstanding that there were few facilities anyhow. In the area of teachers ability to problem solve and critically analyse practice, most teachers responded that there had been no impact, however of those that did identify an impact, there were more positive than negative responses. Additionally, in the area of management of areas of responsibility, although most responses provided reported no impact, those that did identify an impact, reported more negatives than positives.

The limited impact on professional responsibilities perceived by the teachers is surprising given the severity of the event and that two of the schools included in this research were still operating off site without many resources they had prior to the earthquakes. Where a positive or negative impact was outlined, albeit marginal, the findings are consistent with the literature.

Teacher's interest in participating in professional development was reported to be negatively impacted as they reported less desire to participate and reported fewer opportunities available anyhow. Was this a 'flight' response as described by Cannon (1915) or a 'moving away' or withdrawal, as postulated by Horney (1939)? Although this may be the case, alternative or complementary explanations may also account for this resistance to a professional responsibility. Professional development is not an essential activity to maintain effective teaching (at least in the short-term) and therefore participation was simply not a priority when there were so many other (urgent) activities demanding the teachers' time. Teachers reported that they were not able to give professional development the attention it required with some indicating that they were low in energy and time. It was probable also, that if professional development had proceeded as before, there may have been difficulties because teachers may not have given their best. Helton, Head and Kemp (2011) found

individuals to have reduced cognitive functioning following a traumatic event such as an earthquake, and teachers like others were potentially at risk of cognitive dysfunction particularly related to anxiety and depression. The more immediate professional learning occurring in schools was able to be coped with as it was a more supportive environment and wasn't as demanding - Selye's (1956) stage of exhaustion (following the alarm and resistance phases) would suggest that demands had to be limited and be more realistic for the setting. These findings also confirm to some extent those of Kuntz, Naswall and Bockett (2013) suggesting some teachers may have been exhibiting symptoms of emotional exhaustion and burnout. Teachers may have perceived that participation in professional development was another stressor to cope with, on top of the day to day teaching requirements and the added issues associated with the earthquake, and therefore felt a sense of 'role overload' as proposed by Osipow (1998).

Decision-making, as demonstrated by the resistance to engage in professional development was in response to the acknowledgement that it was not a priority. On the whole however, the teachers did not shirk responsibilities but assumed more, however it seems that when decisions were made it was understood that the outcome could be coped with and it was a meaningful action at the time. Lazarus' (1991) appraisal model is useful to consider here – any extra workload situations/demands that were perceived to be unmanageable were rejected. The alternative was more stress. There were other instances when the appraisal was negative - such as – maintaining full classroom activities – and the teachers therefore avoided more stress being developed. It was clear that the teachers reflected about what coping strategies could be facilitated. Although the findings indicated that teachers appraised situations carefully after the earthquakes and engaged in activities that maintained their ability to cope, what is not known is what each teacher's position was prior to these events and their ability to cope then.

Teachers' ability to problem solve and critically analyse their practice was an area perceived to be more positively than negatively impacted by the earthquakes. Some explained that the earthquakes gave them a chance to reflect on their practice and that the situation required them to be more focused. While there was a small number of teachers that perceived the impact to be positive, it was significant that teachers were able to manage the additional workloads and role demands required of them during the crises. They were likely to be coping with their own stress and trauma and yet they reported that they were still able to critically reflect on practice and take professionally responsible actions. The mediating variable here may be located in the findings of Kuntz, Naswall and Bockett (2013) who indicated that teachers with perceived positive work environments viewed the earthquakes to be an opportunity for growth and change. It appears that with many teachers there was remaining energy to continue to work to be 'moving with'.

The results indicated that most teachers perceived the impact on professional responsibilities as being neutral in nature however, participation in professional development was perceived as being negatively impacted while problem solving and critically analysis of practice was somewhat positively impacted. The literature has noted that in adverse situations individuals may experience impaired cognitive functioning, eventual exhaustion, withdrawal, role overload, and feelings of being overwhelmed (in other words, considerable stress) (Helton & Head 2012; Helton, Kemp & Kemp, 2011; Osipow, 1998; Selye, 1976). The findings of this research were consistent with this in regard to one area in particular – resistance to professional development. The findings concerning teachers problem solving and critical analysis of practice were consistent with some of the literature considered (Kuntz, Naswall and Bockett, 2013; Horney 1939). What is particularly significant here is the almost noticeable lack of dysfunctional responses that were reported by the teachers. The question being – what maintained the ongoing teaching responsibilities?

Theme C: Learning Environment

The third finding was in relation to the learning environment which referred to the provision of a safe teaching and learning setting, the collaborative, supportive, motivating teaching-learning context, and the planning and implementation of teaching and assessment. Teachers perceived the learning environment to be largely unaffected by the earthquakes with more than half of responses indicating no impact. Three areas in particular were significant in their responses indicating no impact: the provision of a culturally sensitive learning environment, teachers commitment to the bi-cultural partnership of Aotearoa and integrating Te Reo into the classroom. While other areas also received the majority of responses as having no impact, for those that did identify an impact, the following received more negative than positive responses: Planning, which referred to the conceptualisation, planning and implementation of appropriate learning activities, and assessment, which was the creation, gathering, analysis and use of assessment data. Again, while the responses were mostly no impact, the following areas when an impact was identified, were more positive than negative: provision of a safe (physical and psychological) learning environment, maintenance of a collaborative, supportive motivating learning environment and modification of the teaching approaches to better meet the needs of learners.

The results concerning the impact upon the learning environment were somewhat unexpected. Given the upheaval following the crisis, where some schools needed to relocate, it is interesting that most teachers perceived no impact upon the learning environment. Although planning and assessment were somewhat negatively impacted these results are not reflective of the significant challenges faced by schools in relocating, re-opening after an extended period of closure, significant role decrease, having minimal resources available, and teaching children that were traumatised. The positive impact reported in regard to the provision of a safe learning environment, a collaborative, motivating and supportive learning

and teaching environment and modifying teaching approaches to meet the needs of learners, is probably a testament to the enhanced relationships, collegial bonds and flexibility demonstrated by teachers following the disaster. It was not unexpected that the earthquakes were reported to have virtually no impact upon teachers' provision of a culturally sensitive learning environment, commitment to the bi-cultural partnership of Aotearoa, or inclusion of Te Reo in the classroom. These are fundamental principles embedded in a New Zealand classroom as are many other key dimensions of teaching practice and are unlikely to have been directly influenced by the earthquakes.

Some teachers reported that planning was made more complicated by the circumstances, it was easier to repeat activities, energy levels were low and that they were feeling stressed and exhausted. Gregerson (2007) noted that workplace demands increase after disasters rather than decrease and while attempting to meet these demands workers must also deal with their own reactions and feelings to the experience. Some teachers outlined that they changed their planning to adapt to the changed context, resources, learners and timeframes and their own capabilities. This suggests teachers adopted a problem-focused strategy (Weiten & Lloyd, 2008) to overcome some of the issues faced. Karasek and Theorell's (1990) JDC model and the findings of Wang (2008) suggests survivor employees require flexibility and that workers in general are less stressed if they have a sense of control and manageable demands. Some teachers provided evidence they achieved the flexibility required by adapting their planning to suit the circumstances and their stress levels. In other words, if the teachers perceived that they could engage in decision-making and act in an autonomous professional manner then they were likely to be less stressed.

The indication that the provision of a physically and psychologically safe, collaborative, motivating, supportive learning environment was positively impacted by the earthquakes is a finding that has been supported by the literature. Williams and Drury (2009)

noted that ‘communities of circumstance’ can be formed following an adverse event and provide functional support structure – the teachers reported consciously trying to foster a supportive environment, and being more aware of colleagues' needs. This ‘moving with’ (Horney, 1939) orientation involved adapting to altered teaching contexts and collaborating with other teachers to make otherwise difficult teaching and learning environments feasible. Furthermore, as indicated by the Education Review Office (2013) some teachers altered their teaching approaches to support children’s learning in the post-quake environment guided by the needs of the learners.

While the planning, assessment and approaches of some teachers was altered, if not demanding more consideration, many saw it as an opportunity for professional growth as it enabled them to spend more one on one time with students, utilise ICT and engage in collegial discussions concerning alterations that were required for the changed circumstances. This confirms Kuntz, et al. (2013) research indicating that some teachers viewed the earthquakes as an opportunity for change and professional growth.

Within the learning environment, teachers reported there to be predominantly no impact upon their cultural sensitivity, commitment to the bi-cultural partnership of Aotearoa or the integration of Te Reo in the classroom. Teachers reported that planning and assessment were most negatively impacted upon, confirming literature regarding workplace demands following a disaster. Meanwhile, teachers’ provision of a physically and psychologically safe, collaborative, motivating and supporting learning environment were all perceived as being positively impacted upon by the earthquakes confirming the findings of others who indicated adaptation and development of strong collegial bonds. Many of the teachers collaborated, co-operated and considered the earthquakes as an opportunity for challenge and change. It seems that by engaging in such behaviours during a time of chaos and uncertainty it met the needs of a number of the teachers.

When considering the results obtained from this study, there are a number of issues that need to be explored to contextualise and appreciate the significance and meaning of the data that was collected. An important issue relates to the perceived relatively limited impact of the earthquakes on the teachers' performance. As noted, there were some exceptions to this as many teachers indicated that there were either positive or negative impacts (of relative strength) on professional relationships, responsibilities and learning environment. Given the earthquakes severity however, it was expected that teachers would have given more indication of negative responses and displayed more stress associated behaviours. A number of potential explanations could account for this finding.

Firstly, as already discussed, the data gathering occurred two years after the last major quake and memory recall may have been limited or impaired due to the gap between the events and recall. There are a number of reasons why this might occur. The decay of memory (Hebb, 1949) in individuals, although controversial (Bahrick & Hall, 1991), is one possibility although this is usually associated with short-term memory loss. Interference forgetting, competition from other subsequent memories, is another possibility (Baddeley & Logie 1999). The fuzzy memory, syndrome a much earlier theory, states that people can lack detail in their memories and then substitute what would seem acceptable (Wulf, 1922). Whatever the reason, the lack of recall cannot be ruled out in self-reports.

Self-report as a measure has its difficulties as well. It cannot always be assumed that the participants answered honestly – for example, attempts to impress the researcher may have occurred and in the focus groups there may been a reluctance to indicate problems or anxieties with others present. Inaccurate introspection of one's activities may also have caused teachers to reply in a certain manner as can response bias when a participant gives a response that was thought to be the correct one.

Another important factor to consider is that the contemporary stress literature emphasises the importance of the individual response and meaning located in potential stress stimuli and accordingly, uniform response sets are unlikely. Stress is subjective; some teachers may have found their experience anxiety provoking (etc) while others simply found it as a nuisance. Nevertheless, Selye's (1974) approach would have predicted that those teachers who were stressed with the earthquakes passed through the alarm, resistance and exhaustion stages with stressful events accompanying body responses. No specific data was gathered on these specific responses but in the context of examining teacher professional performance there were some indications of resistance and exhaustion – for example being patient with students initially, but less so as time progressed. The Holmes and Rahe (1967) notion of normative life events contributing to stress, embodied the idea that certain events can be quantified in terms of stress impact and although this was of little value when considering large scale natural disasters it had value for this research because it highlighted that impaired performance can occur as a result of stress and the illness that follows. In this research agenda, a somewhat different perspective was adopted because the events were of a non-normative natural phenomenon being unpredictable events experienced by all the participants and felt in the community. Yet, it was clear from the participants that their role performance varied and indeed on a number of the performance items, it was reported there was no or only minimal impact. It is likely that the Lazarus and Folkman (1984) idea of a transaction between events and the individual can provide more understanding of what was happening. It makes sense that individual teachers each appraised the situation on the basis of their interpretation of the events and their resources to cope – this provides some rationale for the variations in responses ranging from *positive* impact, to *no* impact, to *negative* impact.

It is likely however that interpreting teacher's responses through a stress paradigm lens is only a partial and incomplete explanation. For example, Kuntz, et al. (2013) indicated

that emotional exhaustion, rather than disengagement with students occurred although some teachers were absenting from school. Although the trauma experienced by many teachers may have been exhausting, their appraisal of the event led to the development of coping/maintenance strategies to ensure they were able to continue to teach and remain at school. Therefore, what influenced the appraisal process to develop coping strategies to continue when it could have been easier to be absent from school? It is postulated that the teachers were strengthened in their resolve because their needs were continuing to be met. It is expected that in the chaos around them in the community or at home after the earthquakes, this was less likely to occur. Ntoumanis, Edmunds and Duda (2009) support this thesis suggesting that if the relatedness, competence and autonomy needs as outlined in the BPNT are met, it ensures a level of motivation to continue to perform. What's more, this approach outlines that if changes and disruptions occur in the environment then there are renewed efforts to satisfy the needs. This would account for why teachers (and other workers) could return to work and manage as well as they did; with some it seemed that the earthquakes facilitated the need development whilst others just continued as before to have their needs met.

The teachers frequently noted the relatedness need identified in the BPNT (support to and from others) and indeed, it was reported that a community of support developed around the teachers meeting their individual needs. Many teachers noted that their professional behavior was supported by working collegially and helping each other to adjust to the changed circumstances. Others noted that they gave and received support from learners' whanau. There were also many instances of teacher autonomy being displayed – they were best placed at this time of instability and chaos to make individual decisions about how to maintain ongoing teaching. Adapting planning, changing teaching content, creating support groups, meeting with parents and so on provided opportunities to demonstrate the ability to

effectively plan for the needs of the students. To a certain extent teachers had a flexibility available to them which may not have been previously experienced. Competence, experiencing oneself as effective, was also highlighted in the data gathering. Teachers were placed in a position of responsibility during the earthquakes and most likely felt a sense of duty and their actions were automatic. Teachers received praise and positive feedback from the parents and the community about their actions and subsequent performance and this confirmed their effectiveness and competence and motivated them to continue to perform.

The consideration of these issues in relation to the teachers' responses to the earthquake has provided an understanding of some of the influences operating on the role performance. In Figure 4 (refer below), a schematic conceptual model is outlined that draws upon the teachers' experiences and literature to provides additional clarity about the nature of the impact of the events.

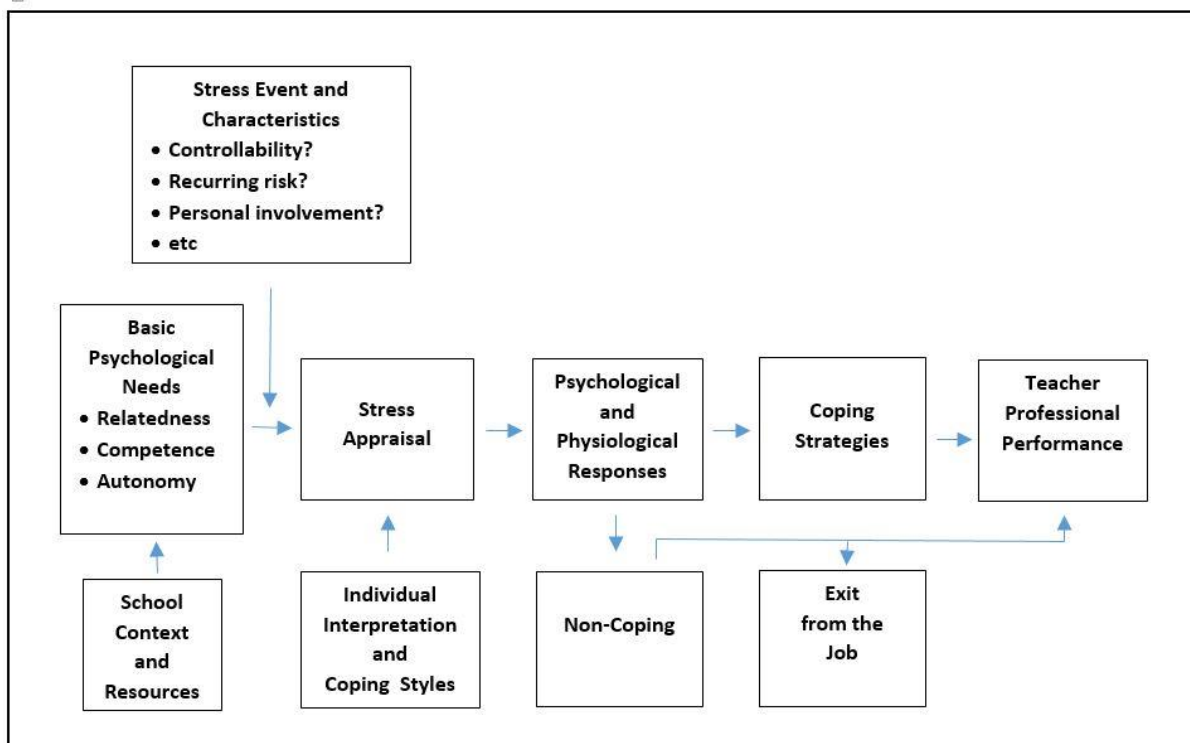


Figure 4. An exploratory model of teachers' performance following a natural disaster

As indicated above, following a natural disaster event, considered significant by the teacher, an appraisal occurs in terms of its likely impact and this is dependent somewhat upon the resilience of the teacher to deal with untoward events. This assessment in turn influences the capacity of the teachers to deal with the event via their perceived strengths of relatedness, competence and autonomy and these needs are partly determined by the specific school contexts and support resources. Once a stress assessment is made following an interpretation of the event and the awareness of available/previous coping strategies, psychological (e.g., emotional reactions) and physiological responses may occur. The teacher can then develop coping strategies that further promotes resilience, enabling continued performance of their role. On the other hand, if the psychological and physiological reactions are severe, teacher exit from the teaching role is one option or if the teacher remains in the school, an impaired performance may occur. Caution needs to be exercised in interpreting this model - it has been a small-scale research project and the development of it is based upon a somewhat limited amount of data. The value is that it provides a tentative explanation of an area where there is a paucity of information. As indicated however, this is an exploratory model and its confirmation and modification will depend upon future research endeavours.

Being an essentially qualitative study that surveyed teachers about their perceptions of the impact of the earthquakes upon their professional performance, it has utilised a constructivist approach. This implies that it is a meaningful valid interpretation of participants' reality. For the teachers, their feelings and reported actions were just that – reported personal accounts. Never-the less, personal interpretations were meaningful to the participants and for them, it was reality. An individual's construction of reality impacts upon the world however and so the seeking of their views was particularly important. For example, a teacher's perception about ability to cope will probably influence behaviour. On the other hand, perceptions about an event do not necessarily equate with truth (in the positivist sense)

and accordingly the data gathered needs to be filtered through this subjective lens. This is not a limitation of the research; it simply provides an alternative perspective. There are however a number of potential limitations of the study and these need to be considered when interpreting the results.

Below a number of these limitations are identified and need to be considered when interpreting the results.

1. This research was undertaken 2 years after the event and memories of the participants may have faded. Furthermore, some of the teachers who had unpleasant experiences in the school may have moved, resigned, etc. The experiences of such teachers may have been valuable to gather.
2. This research centred on the professional response and yet it was clear that the personal and social issues of the teachers influenced the results. Given time, a more extensive collection of data relating to teacher performance would have been useful.
3. It was a relatively small sample of participants from only 7 schools in the east of Christchurch. Valuable data from a wider selection of schools and participants including other parts of Christchurch may have provided different perspectives.
4. It was self-report data and this could have biased the results. The respondents may have exaggerated, been too embarrassed about personal details, influenced by the need to express responses that were socially acceptable and gave responses that reflected the feeling at the time.
5. This was essentially a qualitative study and gathered rich detailed perceptions from the teachers. Quantitative research projects may provide generalizable findings as well as causative links. The current project gives insight into the views of the teachers but does not provide generalizable data or make causative links.

Given there are potential research restraints, the findings do provide strong evidence that the teachers' responses to the earthquakes have provided data that is significant and can inform theory and practice. Some of the implications and recommendations arising from the findings are detailed below.

1. Following a catastrophe such as an earthquake, the educational authorities need to consider what a manageable workload is for teachers, particularly if the teachers themselves are impacted by the event. The provision of ancillary personnel, relieving (supply) teachers and immediate cash flow would provide support to ensure adjustment and on-going education.
2. Because of the importance of the teachers and the school centre as a support at a time of major crisis, teachers need to be better prepared to provide helping skills to assist students and families. The need for basic knowledge and skills in counselling and therapeutic interventions should be part of a teacher's professional repertoire anyhow, as they are front-line staff and existing psychological (etc) services are often limited in availability.
3. Because teachers were actors in the earthquake and many had a role-conflict (home/family responsibilities Vs professional responsibilities), flexible arrangements in times of emergencies need to be established to enable them to attend to both sets of duties. Large-scale employment of relief teachers (perhaps from other areas not affected) could provide additional support to enable the teachers to attend to the tasks required.
4. Teachers overall welfare should be considered; psychological, and material support should be more freely available following a major catastrophe. It is unreasonable to expect teachers to manage without such options when they have a large number of others to care for in the classroom.

5. Professional collegiality structures in schools need to be established/strengthened and maintained not only for curriculum issues and for improvement of student outcomes but also to support teachers' individual and social needs. This would not only strengthen working relationships but also facilitate emotional health and reduce stress and burnout. It was apparent that the collegiality of support provided by teachers was significant in helping them to cope. This would help build the well-being of the students, teachers, whanau and the community and the support of the community and the government needs to be sought to establish these supportive communities.
6. Schools need to remain community oriented and become a hub for the community. As in previous times, the school's focus should incorporate teacher, student, whanau and community interests. At times of crisis, such an arrangement can provide necessary support and act as a focus for action.
7. There are a number of future research recommendations:
 - Investigation of how significant others perceived the teacher's professional responsibility following the earthquake.
 - Undertake research exploring the teachers behaviour as first responders.
 - Examination of teachers' perceptions regarding the interaction of personal, social and professional responses on their role performance.
 - Gathering data from other helping professionals responses to the earthquakes for a comparative report and also comparing that to others workers' responses.

CHAPTER 6: CONCLUSION

It is reported that natural disasters such as earthquakes impact significantly upon survivors' psychological wellbeing. Little is known however about the impact of disasters upon the professional performance of survivor employees such as teachers. This research investigated teacher's perceptions regarding how their performance was impacted by the Canterbury earthquakes in 2010 and 2011. Thirty nine teachers from 6 schools completed questionnaires and participated in follow up focus groups to answer whether their performance had been negatively, neutrally or positively impacted by the earthquakes.

While teachers reported being somewhat stressed, exhausted, and feeling frustrated, results indicated that teacher's performance overall was not significantly negatively impacted by the events which was surprising considering the magnitude of the event and the fact that two of the participating schools were still operating on a temporary site. Most teachers identified however that their relationships with learners, colleagues, learners' whanau and the wider school community were enhanced, as to some extent was their ability to adapt their approaches to meet the needs of learners. Participation in professional development was perceived to be negatively impacted - as was some aspects of assessment.

The lack of negative perceived effects upon teachers' performance may be explained by postulating that the timing of the major earthquakes, during school lunch breaks, forced teachers to be in positions of responsibility and have a sense of duty. The communities of circumstance fostered as a result of the event, led to teachers' need of reciprocity being met, while community and parental appreciation met teachers' needs for competence and motivated teachers to continue to perform. While teacher's roles are largely dictated by governing bodies, their day to day planning is able to be manipulated, and following the earthquakes it would seem teachers' ability to do this met their need of autonomy. The

exploratory model provided details about teachers' appraisal and likely behavioural outcome with regard to their individual perception, personality and coping strategy.

Given the importance of the school in the recovery of a community, consideration of teachers' psychological health should be of paramount importance. Manageable workloads and increased flexibility to avoid role conflict are suggested. Teaching authorities should ensure that school teachers are equipped with a basic counselling ability, while school leaders need to facilitate and maintain a positive collegial environment.

This research was carried out 2-3 years following the most damaging earthquakes, it is possible that teachers memories have impacted the results reported, or that the most negatively impacted teachers have left the profession and were therefore not included in this study.

Further studies should investigate a wider range of data from participants, such as their perceptions surrounding their coping in other personal domains. Perceptions from others should be gathered, including that of stakeholders such as colleagues and parents etc. Finally, future research providing a comparison to other helping professions would be beneficial.

REFERENCES

- Abdullah, D.N.M.A. (2011). *The impact of job burnout towards job performance among nurses*. Available at:
http://ieeexplore.ieee.org/xpl/login.jsp?tp=&arnumber=6088836&url=http%3A%2F%2Fieeexplore.ieee.org%2Fxppls%2Fabs_all.jsp%3Farnumber%3D6088836
- Adamson, S, Fanselow-Brown, P., Prince, P., Prosser, A., Snell, D., & Vertrue, F. (2012). *The Christchurch earthquakes and ongoing Stress*. Available at
<http://www.christchurchpsychology.co.nz/news-and-views/christchurch-earthquakes-ongoing-stress/>
- Aguirre, B. E. (2006). *On the concept of resilience*. Available at:
<http://udspace.udel.edu/handle/19716/2517>
- Aldwin, C. (2007). *Stress, coping, and development*. New York: The Guilford Press.
- Al-Fudail, M., & Mellar, H. (2008). Investigating teacher stress when using technology. *Computers & Education*, 51, 1103–1110. doi:10.1016/j.compedu.2007.11.004
- Altindag, A., Ozen, S., & Sir, A. (2005). One-year follow-up study of posttraumatic stress disorder among earthquake survivors in Turkey. *Comprehensive Psychiatry*, 46(5), 328-333.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (5th ed.)*. Arlington, VA: American Psychiatric Publishing
- American Psychological Association (n.d.). *Trauma*. Available at
<http://www.apa.org/topics/trauma/>
- Anderson, V., Levinson, E., Barker, W., & Kiewra, K. (1999). The effects of meditation on teacher perceived occupational stress, state and trait anxiety, and burnout. *School Psychology Quarterly*, 14(1), 3-25. doi:10.1037/h0088995
- Andrews, M. C., Baker, T., & Hunt, T. G. (2011). Values and person–organization fit: Does moral intensity strengthen outcomes? *Leadership & Organization Development Journal*, 32(1), 5-19.
- Anencephaly, L. A., & Seizure, A. I. (2005). Posttraumatic stress disorder and general psychopathology in children and adolescents following a wildfire disaster. *Canadian Journal of Psychiatry*, 50, 137-143.
- Ardalan, A., Mazaheri, M., Vanrooyen, H., Mowafi, S., Nedjat, S., Holakouienaieni, K., & Russel, M., (2011). Post-disaster quality of life among older survivors five years after the Bam earthquake: Implications for recovery policy. *Ageing and Society*, 31, 179-196.

- Baddeley, A. D., & Logie, R. H. (1999). Working memory: The multiple-component model. In A. Miyake & P. Shah (Eds.), *Models of working memory* (pp. 28-61). Cambridge, UK: Cambridge University Press.
- Bahrick, H.P.; Hall, L.K. (1991). "Preventive and corrective maintenance of access to knowledge. Appl". *Cognitive Psychology*, 5, 1–18. [doi:10.1002/acp.2350050102](https://doi.org/10.1002/acp.2350050102).
- Başoğlu, M., Kılıç, C., Şalcıoğlu, E., & Livanou, M. (2004). Prevalence of posttraumatic stress disorder and comorbid depression in earthquake survivors in Turkey: an epidemiological study. *Journal of Traumatic stress*, 17(2), 133-141.
- Basoglu, M., Salcioglu, E., & Livanou, M. (2007). A randomized controlled study of single-session behavioural treatment of earthquake-related post-traumatic stress disorder using an earthquake simulator. *Psychological Medicine*, 37(2), 203-13. Available at <http://search.proquest.com/docview/204494267?accountid=14782>
- Beaton, R., Murphy, S., Johnson, C., Pike, K., Corneil, W., (1998). Exposure to duty-related incident stressors in urban firefighters and paramedics. *Trauma & Stress*, 11(4), 821–28
- Bisson, J., & Andrew, M. (2007) *Psychological treatment of post-traumatic stress disorder (PTSD)*. Available at: <http://adam.about.net/encyclopedia/infectiousdiseases/Post-traumatic-stress-disorder.htm>
- Blase, J. J. (1986). A qualitative analysis of sources of teacher stress: Consequences for performance. *American Educational Research Journal*, 23(1), 13-40.
- Boksztzanin, A. (2008). Parental support, family conflict, and overprotectiveness: Predicting PTSD symptom levels of adolescents 28 months after a natural disaster. *Anxiety, Stress, & Coping*, 21(4), 325-335.
- Bonanno, G. A. (2004). Loss, trauma, and human resilience: have we underestimated the human capacity to thrive after extremely aversive events? *American Psychologist*, 59(1), 20.
- Bonanno, G. A., Galea, S., Bucciarelli, A., & Vlahov, D. (2007). What predicts psychological resilience after disaster? The role of demographics, resources, and life stress. *Journal of Consulting and Clinical Psychology*, 75(5), 671.
- Bonanno, G. A., Galea, S., Bucciarelli, A., & Vlahov, D. (2006). Psychological resilience after disaster New York city in the aftermath of the September 11th Terrorist Attack. *Psychological Science*, 17(3), 181-186.
- Boon, C., & Den Hartog, N. (2011). Human resource management, person–environment fit, and trust. In R. Searle & D. Skinner, *Trust and human resource management* (pp.109-124). Cheltenham, UK & Northampton, MA, USA: Edward Elgar.
- Breslau, N. (2002). In Review. *Canadian Journal of Psychiatry*, 47, 923-929.

- Brien, M., Hass, C., & Savoie, A. (2012). Psychological health as a mediator between need satisfaction at work and teachers' self-perceptions of performance. *Canadian Journal of Behavioural Science/Revue Canadienne des Sciences du Comportement*, 44(4), 288-299.
- Broussard, L., & Myers, R. (2010). School nurse resilience: Experiences after multiple natural disasters. *The Journal of School Nursing*, 26(3), 203-11. Available at <http://search.proquest.com/docview/375303227>
- Bryant, R. A., & Guthrie, R. M. (2007). Maladaptive self-appraisals before trauma exposure predict posttraumatic stress disorder. *Journal of Consulting and Clinical Psychology*, 75(5), 812.
- Bryant, R.A. (2011) Acute stress disorder as a predictor of posttraumatic stress disorder: a systematic review. *Journal of Clinical Psychiatry*, 72(2), 233-239.
- Bryant, R.A., (2005). Psychosocial approaches to acute stress reactions. *CNS Spectrums*, 10(2), 116–22.
- Cable, D. M., & Edwards, J. R. (2004). Complementary and supplementary fit: a theoretical and empirical integration. *Journal of Applied Psychology*, 89(5), 822
- Cannon, W.B., (1915). *Bodily changes in pain, hunger, fear and rage: An account of recent researches into the function of emotional excitement*. NY: Appleton.
- Cardno, C. (2001). Managing dilemmas in appraising performance: An approach for school leaders. In D. Middlewood & C. Cardno (Eds.), *Managing teacher appraisal and performance: A comparative approach* (pp. 143-159). London: Routledge Farmer.
- Cardozo, B. L., Bilukha, O. O., Gotway Crawford, C. A. (2004). Mental health, social functioning, and disability in post-war Afghanistan. *Journal of American Medical Association*, 292, 575–584.
- Carlson, E. B., & Josef, R. (2004) Effects of traumatic experiences: a national center for PTSD fact sheet. *National Center for Post-Traumatic Stress Disorder*. Available at: http://www.ncptsd.va.gov/facts/general/fs_effects.html
- Carver, C. S.; Connor-Smith, J. (2010). Personality and coping. *Annual Review of Psychology*, 61, 679 - 704.
- Chan, K. L., & Zhang, Y. (2011). Female victimization and intimate partner violence after the May 12, 2008, Sichuan earthquake. *Violence and Victims*, 26(3), 364-76. Available at <http://search.proquest.com/docview/876078825?accountid=14782>
- Changchun, Z. (2009). A survey on teachers' mental health after Wenchuan earthquake. *Chinese Journal of Special Education*, 5, 011.

- Chen, G., & Shen, H. (2012). A cross-sectional study on posttraumatic stress disorder among elderly Qiang citizens 3 years after the Wenchuan earthquake in China. *Canadian Journal of Psychiatry. Revue Canadienne de Psychiatrie*, 57(9), 547-553.
- Chen, J. C. (2008). The impact of locus of control on job stress, job performance and job satisfaction in Taiwan. *Leadership Organizational Development Journal*, 29(7), 572-582.
- Chrousos, G. P. & Gold, P. W. (1992) The concepts of stress and stress system disorders: overview of physical and behavioural homeostasis. *Journal of the American Medical Association*, 267(9), 1244–1252.
- Cocking, C. (2013). The role of "zero-responders" during 7/7: Implications for the emergency services. *International Journal of Emergency Services*, 2(2), 79-93.
- Cohen, H. (2006) *What causes PTSD?*. Psych Central. Available at <http://psychcentral.com/lib/2006/what-causes-ptsd>.
- Cohen, S., & Wills, T.A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, 98(2), 310–357.
- Cohen, S; Janicki-Deverts, D; Miller, GE. (2007). Psychological stress and disease. *Journal of the American Medical Association* 298 (14), 1685 – 1687.
[doi:10.1001/jama.298.14.1685](https://doi.org/10.1001/jama.298.14.1685). PMID 17925521.
- Collie, R. J., Shapka, J. D., & Perry, N. E. (2012). School Climate and Social–Emotional Learning: Predicting Teacher Stress, Job Satisfaction, and Teaching Efficacy. *Journal of Educational Psychology*, 104(4), 1189-1204. doi: 10.1037/a0029356
- Connolly, M. J. (2013). *The impacts of the Canterbury earthquakes on educational inequalities and achievement in Christchurch secondary schools*. Available at: <http://ir.canterbury.ac.nz/handle/10092/7903>
- Dantzer, R. and K. W. Kelley (1989). Stress and immunity: an integrated view of relationships between the brain and the immune system. *Life Sciences*. 44(26), 1995-2008.
- De Nobile, J., & McCormick, J. (2005, November). *Job satisfaction and occupational stress in Catholic primary schools*. Paper presented at the annual conference of the Australian Association for Research in Education, Sydney, Australia.
- DeAngelis, T. (1995, February). Firefighters' PTSD at dangerous levels. *APA Monitor*, pp. 36-37.
- deCharms, R. (1968). *Personal causation: The internal affective determinants of behaviour*. New York: Academic Press.

- Deci, E. L. (1971). Effects of externally mediated rewards on intrinsic motivation. *Journal of Personality and Social Psychology*, 18(1), 105–115.
- Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11(4), 319-338.
- Demir, T., Demir, D. E., Alkas, L., Copur, M., Dogangun, B., & Kayaalp, L. (2010). Some clinical characteristics of children who survived the Marmara earthquakes. *European Child & Adolescent Psychiatry*, 19(2), 125-133.
- DePrince, A.P. & Freyd, J.J. (2002). The harm of trauma: Pathological fear, shattered assumptions, or betrayal? In J. Kauffman (Ed.) *Loss of the assumptive world: A theory of traumatic loss*. (pp 71–82). NY: Brunner-Routledge.
- Dorahy, M. & Kannis-Dymand, L. (2012). Psychological distress following the 2010 Christchurch earthquake: A community assessment of two differentially affected suburbs. *Journal of Loss and Trauma*, 17, 203–217.
DOI:10.1080/15325024.2011.616737
- Drury, J. (2011). Collective resilience in mass emergencies and disasters: a social identity model. In J. Jetten, C. Haslam, C. and S. Haslam (Eds), *The social cure: Identity, health and well-being* (pp. 195-215). Hove, UK: Psychology Press.
- Eksi, A., Braun, K. L., Ertem-Vehid, H., Peykerli, G., Saydam, R., Toparlak, D., & Alyanak, B. (2007). Risk factors for the development of PTSD and depression among child and adolescent victims following a 7.4 magnitude earthquake. *International Journal of Psychiatry in Clinical Practice*, 11(3), 190-199.
- Elhai, J. D., Gray, M. J., Docherty, A. R., Kashdan, T. B., & Kose, S. (2007). Structural validity of the posttraumatic stress disorder checklist among college students with a trauma history. *Journal of Interpersonal Violence*, 22(11), 1471-1478.
- Fenichel, O. (1999). *The psychoanalytic theory of neurosis*. NY: Norton.
- Fergusson, D. M., & Boden, J. M. (2014). The psychological impacts of major disasters. *Australian and New Zealand Journal of Psychiatry*, 48(7), 597-599.
- Figley, C., Giel, R.; Borgo, S., Briggs, S., & Haritos-Fatouros, M. (1995). Prevention and treatment of community stress: How to be a mental health expert at the time of disaster. In S. E. Hobfoll & M. W. de Vries (Eds.), *Extreme stress and communities: Impact and intervention* (pp. 307-324). Dordrecht, NL: Kluwer.
- Foodrisc (2014) *Mixed methods research*. Available at:
http://resourcecentre.foodrisc.org/mixed-methods-research_185.html
- Fordham, B. (2011). *Chapter 12 - Stress and health*. [PowerPoint slides]. Available at
<http://stjosephspsychology2011.wikispaces.com/search/view/stress%20and%20health>

Freedman, L. (2004). *Deterrence*. Oxford: Blackwell Publishing.

Freedy, J. R., Shaw, D. L., Jarrell, M. P., & Masters, C. R. (2006). Towards an understanding of the psychological impact of natural disasters: An application of the conservation resources stress model. *Journal of Traumatic Stress, 5*(3), 441-454.

Fullerton, C. S., Ursano, R. J., & Wang, L. (2004). Acute stress disorder, posttraumatic stress disorder, and depression in disaster or rescue workers. *American Journal of Psychiatry, 161*(8), 1370-1376.

Fullerton, C. S., Ursano, R. J., Norwood, A. E., & Holloway, H. H. (2003). Trauma, terrorism, and disaster. *Terrorism and disaster. Individual and community mental health interventions*, 1-20.

Fushimi, M. (2012). Posttraumatic stress in professional firefighters in Japan: Rescue efforts after the great east Japan earthquake (higashi nihon dai-shinsai). *Pre-hospital and Disaster Medicine, 27*(5), 416-418.
doi:<http://dx.doi.org/10.1017/S1049023X12001070>

Galambos, C. M. (2005). Natural disasters: Health and mental health considerations. *Health & Social Work, 30*(2), 83-86. Available at
<http://search.proquest.com/docview/210549962>

Gerrig, R. & Zimbardo, P. (2002). *Psychology and life*. Boston, MA: Allyn and Bacon.

Glanz, K. & Schwartz, M. (2008). Stress, coping and health behaviour. In K. Glanz, B. Rimer & K. Viswanath (Eds), *Health behaviour and health education: Theory, research and practice (pp.211-236)*. San Francisco, CA: Jossey Bass.

Goddard, J. T. (2000). Teaching in turbulent times: Teachers' perceptions of the effects of external factors on their professional lives. *Alberta Journal of Educational Research, 46*(4), 293. Available at
<http://search.proquest.com/docview/228620249?accountid=14782>

Goenjian, A. K., Najarian, L. M., Pynoos, R. S., Steinberg, A. M., Manoukian, G., Tavosian, A., & Fairbanks, L. A. (1994). Posttraumatic stress disorder in elderly and younger adults after the 1988 earthquake in Armenia. *American Journal of Psychiatry, 151*(6), 895-901.

Gray, M. J., Maguen, S., & Litz, B. T. (2004). Acute psychological impact of disaster and large-scale trauma: limitations of traditional interventions and future practice recommendations. *Pre-hospital and Disaster Medicine, 19*(01), 64-72.

Green, B. L., Korol, M., Grace, M. C., Vary, M. G., Leonard, A. C., Gleser, G. C., & Smitson-Cohen, S. (1991). Children and disaster: Age, gender, and parental effects on

- PTSD symptoms. *Journal of the American Academy of Child & Adolescent Psychiatry*, 30(6), 945-951.
- Greene, R. W., Beszterczey, S. K., Katzenstein, T., Park, K., & Goring, J. (2002). Are students with ADHD more stressful to teach? Patterns of teacher stress in an elementary school sample. *Journal of Emotional and Behavioural Disorders*, 10(2), 79-89.
- Gregerson, M. B. (2007). Creativity enhances practitioners' resiliency and effectiveness after a hometown disaster. *Professional Psychology: Research and Practice*, 38(6), 596-602. doi:<http://dx.doi.org/10.1037/0735-7028.38.6.59>
- Griffith, J., Steptoe, A., & Cropley, M. (1999). An investigation of coping strategies associated with job stress in teachers. *British Journal of Educational Psychology*, 69(4), 517-531.
- Guan, Y., Deng, H., Risavy, S. D., Bond, M. H., & Li, F. (2010). Supplementary fit, complementary fit, and work-related outcomes: The role of self-construal. *Journal of Applied Psychology*, 60(2), 210-286.
- Guo, Y. J., Chen, C. H., Lu, M. L., Tan, H. K. L., Lee, H. W., & Wang, T. N. (2004). Posttraumatic stress disorder among professional and non-professional rescuers involved in an earthquake in Taiwan. *Psychiatry Research*, 127(1), 35-41.
- Gupta, J., & Agrawal A. (2010). Chronic aftershocks of an earthquake on the well-being of children in Haiti: violence, psychosocial health and slavery. *Canadian Medical Association Journal*, 182(18), 1997-1999.
- Haar, R. J., Naderi, S., Acerra, J. R., Mathias, M., & Alagappan, K. (2012). The livelihoods of Haitian health-care providers after the January 2010 earthquake: a pilot study of the economic and quality-of-life impact of emergency relief. *International Journal of Emergency Medicine*, 5(1), 13.
- Hall, A., & Manins, M. (2001). In loco parentis and the professional responsibilities of teachers. *Waikato Journal of Education*, 7, 117-128.
- Harvey, A.G., & Bryant, R.A. (2002) Acute stress disorder: A synthesis and critique. *Psychological Bulletin*, 128(6), 886-902.
- Hebb, D. O. (1949). *The organization of behavior*. NY: Wiley.
- Helton, W. & Head, J. (2012). Earthquakes on the mind: Implications of disasters for human performance. *Human Factors*, 54(2), 189-194. DOI:10.1177/0018720811430503
- Helton, W., Kemp, J., & Kemp, S. (2011). Natural disaster induced cognitive disruption: Impacts on action slips. *Consciousness and Cognition*, 20(4), 1732-1737. doi:10.1016/j.concog.2011.02.011

- Hill, M. F., & Haigh, M. A. (2012). Creating a culture of research in teacher education: Learning research within communities of practice. *Studies in Higher Education*, 37(8), 971-988. Available at <http://search.proquest.com/docview/1314311393?accountid=14782>
- Holmes T., Rahe, R. (1967). The Social Readjustment Rating Scale. *Journal of Psychosomatic Research*, 11(2), 213–8. doi:10.1016/0022-3999(67)90010-4
- Horney, K. (1939). What is a neurosis? *American Journal of Sociology*, 45(3), 426-432.
- Huimin, B., Kenan, W., Hua, F., & Qiongwen, Z. (2009). A study of social workers' involvement in the relief and reconstruction efforts following the 5.12 Wenchuan earthquake. *China Journal of Social Work*, 2(3), 211-219.
- Hung, C. L., (2011). Coping strategies of primary school teachers in Taiwan experiencing stress because of teacher surplus. *Social Behaviour and Personality*, 39(9), 1161-1173.
- Hynds, A., & McDonald L. (2010). Motivating teachers to improve learning for culturally diverse students in New Zealand: Promoting Maori and Pacific Islands student achievement. *Professional Development in Education*, 36(3), 525-540.
- Institute of Medicine (2008). *Treatment of posttraumatic stress disorder: An assessment of the evidence*. Washington, DC: The National Academies Press.
- Jansen, A. S. P., Nguyen, X. V., Karpitskiy, V., Mettenleiter, T. C., & Loewy, A. D. (1995). Central command neurons of the sympathetic nervous system: Basis of the fight-or-flight response. *Science*, 270(5236), 644 -646.
- Jarzabkowski, L. M. (2002). The social dimensions of teacher collegiality. *Journal of Educational Enquiry*, 3(2), 1-20.
- Jenson, J. M. (2005). Reflections on natural disasters and traumatic events. *Social Work Research*, 29(4), 195-198. Available at <http://search.proquest.com/docview/212144214>
- Johnson S, Langlieb A, Teret S, Gross R, Schwab M, et al. 2005. Rethinking first response: Effects of the clean-up and recovery effort on workers at the World Trade Center disaster. *Journal of Occupational and Environmental Medicine*, 47(4), 386-391.
- Jones, J. (2006). Mother nature's disasters and their health effects: A literature review. *Nursing Forum*, 41(2), 78-87. Available at <http://search.proquest.com/docview/195029932>
- Karairmak, Ö., & Aydin, G. (2008). Reducing earthquake-related fears in victim and nonvictim children. *The Journal of Genetic Psychology*, 169(2), 177-85. Available at <http://search.proquest.com/docview/228547983?accountid=14782>
- Karasek Jr, R. A. (1979). Job demands, job decision latitude, and mental strain: Implications for job redesign. *Administrative Science Quarterly*, 285-308.

- Karasek, R., & Theorell, T. (1990). *Healthy work*. NY: Basic Book.
- Kassam-Adams, N., & Winston, F. K. (2004). Predicting child PTSD: the relationship between acute stress disorder and PTSD in injured children. *Journal of the American Academy of Child & Adolescent Psychiatry*, 43(4), 403-411.
- Kato, H., Asukai, N., Miyake, Y., Minakawa, K., & Nishiyama, A. (1996). Post-traumatic symptoms among younger and elderly evacuees in the early stages following the 1995 Hanshin-Awaji earthquake in Japan. *Acta Psychiatrica Scandinavica*, 93(6), 477-481.
- Kemp, S. Helton, W., Richardson, J., Blampied, N., & Grimshaw, M. (2011). Sleeplessness, stress, cognitive disruption and academic performance following the September 4, 2010, Christchurch earthquake. *Australasian Journal of Disaster and Trauma Studies*, 2, 11-18
- Kessler, R. C., Sonnega, A., Bromet, E., Hughes, M., & Nelson, C. B. (1995). Posttraumatic stress disorder in the National Comorbidity Survey. *Archives of General Psychiatry*, 52(12), 1048–1060
- Kiliç, E. Z., Özgüven, H. D., & Sayil, I. (2003). The psychological effects of parental mental health on children experiencing disaster: The experience of Bolu earthquake in Turkey. *Family Process*, 42(4), 485-495.
- Kimhi, S., & Shamai, M. (2004). Community resilience and the impact of stress: Adult response to Israel's withdrawal from Lebanon. *Journal of Community Psychology*, 32(4), 439-451.
- Klassen, R. M., & Chiu, M. M. (2010). Effects on teachers' self-efficacy and job satisfaction: Teacher gender, years of experience, and job stress. *Journal of Educational Psychology*, 102(3), 741–756.
- Komarovskaya, I., Brown, A. D., Galatzer-Levy, I., Madan, A., Henn-Haase, C., Teater, J., Chemtob, C. M. (2014). Early physical victimization is a risk factor for posttraumatic stress disorder symptoms among Mississippi police and firefighter first responders to Hurricane Katrina. *Psychological Trauma: Theory, Research, Practice, and Policy*, 6 (1), 92-96.
- Kristof-Brown, A.L., Zimmerman, R.D., & Johnson, E.C. (2005). Consequences of individuals' fit at work: A meta-analysis of person–job, person–organization, person–group, and person–supervisor fit. *Personnel Psychology*, 58(2), 281–342.
- Kronenberg, M., Osofsky, Howard J, Osofsky, J., Many, M., Hardy, M., & Arey, J, (2008). First responder culture: Implications for mental health professionals providing services following a natural disaster. *Psychiatric Annals*, 38(2), 114-118.
- Krug, E. G., Kresnow, M., Peddicord, J. P., Dahlberg, L. L., Powell, K. E., Crosby, A. E., & Annett, J. L. (1998). Suicide after natural disasters. *The New England Journal of*

- Medicine*, 338(6), 373-378. Available at
<http://search.proquest.com/docview/223950307?accountid=14782>
- Kuntz, J., Naswall, K., & Bockett, A. (2013). Keep calm and carry on? An investigation of teacher burnout in a post-disaster context. *New Zealand Journal of Psychology*, 42(2), 57-67.
- Kwag, S. & Kim, M. (2009). The study on the effects of organizational members' job burnout. *Journal of Business and Economics Research*, 7(7), 63-68.
- Kwon Y, Maruyama S, Morimoto K. (2001). Life events and posttraumatic stress in Hanshin-Awaji earthquake victims. *Environmental Health and Preventative Medicine*, 6(2), 97-103.
- Kyriacou, C. (2001) Teacher Stress: Directions for future research. *Educational Review*, 53(1), 27-35, DOI: 10.1080/00131910120033628
- La Greca, A. M., Silverman, W. K., Vernberg, E. M., & Prinstein, M. J. (1996). Symptoms of posttraumatic stress in children after Hurricane Andrew: a prospective study. *Journal of Consulting and Clinical Psychology*, 64(4), 712.
- Lange, D. (1988). *Tomorrow's schools: The reform of education administration in New Zealand*. Wellington, NZ: Government Printer.
- Lanhai, S. X. (2010). The research on coping style, general well-being and the relation between them on middle school teachers in earthquake disaster areas. *Science of Social Psychology*, 4, 009.
- Lazarus, R S. (1993). Coping theory and research: Past, present, and future. *Psychosomatic Medicine*, 55(3), 234-247.
- Lazarus, R.S. (1991). *Emotion and adaptation*. New York, NY: Oxford University Press.
- Lazarus, R.S., & Folkman, S. (1984). *Stress, appraisal and coping*. NY: Springer.
- Lee, D. (n.d.) . *The hidden costs of trauma in the workplace*. Available at
http://www.humannatureatwork.com/articles/workplace_stress/Workplace-Stress-3.htm
- Lincoln, Y.S. & Guba, E.G. (1985). *Naturalistic inquiry*. Beverly Hills, CA: Sage.
- Livingston, H. M., Livingston, M. G., Brooks, D. N., & McKinlay, W. W. (1992). Elderly survivors of the Lockerbie air disaster. *International Journal of Geriatric Psychiatry*, 7(10), 725-729.
- Lo, S. (2003). Perceptions of work-family conflict among married female professionals in Hong Kong. *Personnel Review*, 32(3), 376-390.

- Locke, T., Whitehead, D., Dix, S., & Cawkwell, G. (2011). New Zealand teachers respond to the 'national writing project' experience. *Teacher Development*, 15(3), 273. Available at <http://search.proquest.com/docview/897883496?accountid=14782>
- Long, P. W (2011) *Internet mental health: Acute stress disorder*. Available at: <http://www.mentalhealth.com/dis/p20-an08.html>.
- Mariampolski, H. (2001). *Qualitative market research*. Thousand Oaks, CA: Sage Publications, Incorporated.
- Maslach, C. & Jackson, S.E. (1986). *Maslach Burnout Inventory*. Palo Alto, CA: Consulting Psychology Press.
- Maslow, A. H. (1943). A theory of human motivation. *Psychological Review*, 50(4), 370-396. doi:10.1037/h0054346
- Mason, J. W. (1971). A re-evaluation of the concept of “non-specificity” in stress theory. *Journal of Psychiatric Research*, 8(3), 323–333.
- McCone, J (2011). *The quakes long-term toll*. The Press. Available at <http://www.stuff.co.nz/the-press/news/christchurch-earthquake-2011/5913790/The-quakes-long-term-toll>
- McEwen, B.S., & Stellar, E. (1993). Stress and the individual. Mechanisms leading to disease. *Archives of Internal Medicine*, 153(18), 2093–101.
- McFarlane, A. C. (1987). Posttraumatic phenomena in a longitudinal study of children following a natural disaster. *Journal of the American Academy of Child & Adolescent Psychiatry*, 26(5), 764-769.
- McFarlane, A. H., Norman, G. R., Streiner, D. L., & Roy, R. G. (1983). The process of social stress: Stable, reciprocal, and mediating relationships. *Journal of Health and Social Behavior*, 160-173.
- McSaveney, E. (2010). Historic earthquakes - The 1987 Edgecumbe earthquake. *Te Ara - the Encyclopedia of New Zealand*. Available at: http://en.wikipedia.org/wiki/1987_Edgecumbe_earthquake.
- Meyer, E. C., Zimering, R., Daly, E., Knight, J., Kamholz, B. W., & Gulliver, S. B. (2012). Predictors of posttraumatic stress disorder and other psychological symptoms in trauma-exposed firefighters. *Psychological Services*, 9(1), 1.
- Miles, M. B., Huberman, A. M., & Saldaña, J. (2013). *Qualitative data analysis: A methods sourcebook*. CA: Sage Publications.
- Milne, J. (1999). *Evaluation cookbook*. Available at http://www.icbl.hw.ac.uk/ltdi/cookbook/info_questionnaires/

- Ministry of Education. (1998). *Interim framework of professional standards for teachers*. Available at:
<http://www.minedu.govt.nz/NZEducation/EducationPolicies/SchoolEmployment/TeachersPrincipals/PrimaryTeachers/CollectiveAgreement/Schedule3.aspx>.
- Ministry of Education. (2014) *Directory of schools*. Available at:
<http://www.minedu.govt.nz/parents/allages/schoolsearch.aspx>
- Moss, S. (2008). *Self-determination theory*. Available at <http://www.psych-it.com.au/Psychlopedia/article.asp?id=68>
- Murphy, S. A. (2007). Stress levels and health status of victims of a natural disaster. *Research in Nursing & Health*, 7(3), 205-215.
- Murray, H. A. (1938). *Explorations in personality*. New York, NY: Oxford University Press.
- Mutch, C. (2013). Sailing through a river of emotions: capturing children's earthquake stories. *Disaster Prevention and Management*, 22(5), 445-455.
- Mutch, C., & Marlowe, J. (2013). Lessons from disaster: the power and place of story. *Disaster Prevention and Management*, 22(5), 385-394.
- Nagel, L., & Brown, S. (2003). The ABCs of managing teacher stress. *The Clearing House*, 76(5), 255-258.
- National Council on Teacher Quality (n.d.). *Professional responsibility*. Available at www.nctq.org/docs/LA__Rec._School_dist_Professional_Responsibility_Rubric_sflb.pdf.
- Neria, Y., Nandi, A., & Galea, S. (2008). Post-traumatic stress disorder following disasters: A systematic review. *Psychological Medicine*, 38(4), 467-80.
- New South Wales Department of Education and Communities. (n.d.) *Professional responsibilities*. Available at <http://www.dec.nsw.gov.au/about-us/careers-centre/school-careers/teaching/your-teaching-career/approved-teachers/casual-teacher-induction/professional-responsibilities>
- New Zealand Education review Office (2013) *Stories of Resilience and Innovation in Schools and Early Childhood Services: Canterbury Earthquakes 2010-2012*. Available at:
<http://www.ero.govt.nz/National-Reports/Stories-of-Resilience-and-Innovation-in-Schools-and-Early-Childhood-Services-Canterbury-Earthquakes-2010-2012-June-2013>.
- New Zealand Police (2012) *List of deceased*. Available at: <http://www.police.govt.nz/major-events/previous-major-events/christchurch-earthquake/list-deceased>
- New Zealand Teachers Council (2004). *Code of ethics for registered teachers*. Available at <http://www.teacherscouncil.govt.nz/required/ethics/codeofethics.stm>

- New Zealand Teachers Council (2010). *Registered teacher criteria*. Available at <http://www.teacherscouncil.govt.nz/content/registered-teacher-criteria-1>
- New Zealand Teachers Council (2012) *New Zealand Teachers Council: Registration policy document*. Available at: http://www.teacherscouncil.govt.nz/required/Registration_Policy_2012.pdf
- Noddings, N. (2000, April). *Care and coercion in school reform*. Paper presented at the Annual Conference of the American Educational Research Association, New Orleans, Louisiana.
- Nohara, M. (2011). Impact of the great East Japan earthquake and tsunami on health, medical care and public health systems in Iwate prefecture, Japan, 2011. *Western Pacific Surveillance and Response Journal*, 2(4), 1-1.
- Norris, F. H., Friedman, M. J., Watson, P. J., Byrne, C. M., Diaz, E., & Kaniasty, K. (2002). 60,000 disaster victims speak: Part I. An empirical review of the empirical literature, 1981–2001. *Psychiatry: Interpersonal and Biological Processes*, 65(3), 207-239.
- North, C. S. (2010). A tale of two studies of two disasters: Comparing psychosocial responses to disaster among Oklahoma city bombing survivors and hurricane Katrina evacuees. *Rehabilitation Psychology*, 55(3), 241-246.
- North, C. S., Oliver, J., & Pandya, A. (2012). Examining a comprehensive model of disaster-related posttraumatic stress disorder in systematically studied survivors of 10 disasters. *American Journal of Public Health*, 102(10), e40-e48.
- Ntoumanis N, Edmunds J, & Duda J. (2009). Understanding the coping process from a self-determination theory perspective. *British Journal of Health Psychology*, 14(2), 249-60. doi: 10.1348/135910708X349352
- Nygaard, E., & Heir, T. (2012). World assumptions, posttraumatic stress and quality of life after a natural disaster: A longitudinal study. *Health and Quality of Life Outcomes*, 10(1), 76.
- Olpin, M., & Hesson, M. (2012) *Stress management for life: A research-based experiential approach*. Belmont, CA: Wadsworth
- Oregon School Boards Association. 2009. *Motivating teachers to improve instruction* Available at: http://www.osba.org/Resources/Article/Employee_Management/Motivating_Teachers_to_Improve_Instruction.aspx
- Osipow, S. H. (1998). *Occupational Stress Inventory*. Odessa, FL: Psychological Assessment Resources, Inc
- Papousek, H., & Papousek, M. (1979). Early ontogeny of human social interaction. In, M. Von Cranach, K. Koppa, 'V. Lepenies, & P. Ploog (Eds.), *Human ethology: Claims and limits of a new discipline* (pp. 63-85). Cambridge: Cambridge University Press

- Parker, J. F., Bahrick, L. E., Fivush, R., & Johnson, P. (2006). The impact of stress on mothers' memory of a natural disaster. *Journal of Experimental Psychology: Applied*, 12(3), 142-154.
- Pastorino, E. & Doyle-Portillo, S. (2009). *What is psychology?* Belmont, CA: Thompson Higher Education.
- Peek-Asa, C., Ramirez, M., Young, T., & Cao, Y. (2012). Flood-related work disruption and poor health outcomes among university students. *Pre-hospital and Disaster Medicine*, 1(1), 1-6.
- Piyasil, V., Ketuman, P., Plubrukarn, R., Jotipanut, V., Tanprasert, S., Aowjinda, S., & Thaeeromanophap, S. (2007). Post traumatic stress disorder in children after tsunami disaster in Thailand: 2 years follow-up. *Medical Journal of the Medical Association of Thailand*, 90(11), 2370.
- Powell R.A., Single H.M., Lloyd K.R. (1996). Focus groups in mental health research: Enhancing the validity of user and provider questionnaires. *International Journal of Social Psychology* 42 (3), 193-206.
- Priebe, S., Marchi, F., Bini, L., Flego, M., Costa, A., & Galeazzi, G. (2011). Mental disorders, psychological symptoms and quality of life 8 years after an earthquake: findings from a community sample in Italy. *Social Psychiatry and Psychiatric Epidemiology*, 46(7), 615-621.
- Qin, X., & Jiang, Y. (2011). The impact of natural disaster on absenteeism, job satisfaction, and job performance of survival employees: An empirical study of the survivors in Wenchuan Earthquake. *Frontiers of Business Research in China*, 5(2), 219-242.
- Quigley, M., Villamor, P., Furlong, K., Beavan, J., Van Dissen, R., Litchfield, N., & Cox, S. (2010). Previously unknown fault shakes New Zealand's South Island. *EOS, Transactions American Geophysical Union*, 91(49), 469-470.
- Rea, L. M., & Parker, R. A. (2012). *Designing and conducting survey research: A comprehensive guide*. John Wiley & Sons.
- Reich, J. W. (2006). Three psychological principles of resilience in natural disasters. *Disaster Prevention and Management*, 15(5), 793-798.
- Rice, V. H. (2011). *Theories of stress and its relationship to health. Handbook of stress, coping, and health: Implications for nursing research, theory, and practice*. NY: Sage.
- Rothschild B (2000). *The body remembers: the psychophysiology of trauma and trauma treatment*. New York: Norton
- Rubie-Davies, C., Hattie, J., & Hamilton, R. (2006). Expecting the best for students: Teacher expectations and academic outcomes. *British Journal of Educational Psychology*, 6(3),

- 429-429. Available at
<http://search.proquest.com/docview/216959974?accountid=14782>
- Ryan, R. (1995). Psychological needs and the facilitation of integrative processes. *Journal of Personality*, 63, 397-427.
- Ryan, R. (2009). Self-determination theory and wellbeing. *WeD Research Review 1*. Available at http://www.welldev.org.uk/wed-new/network/research-review/Review_1_Ryan.pdf
- Deci, E., & Ryan, R. M. (2011). Self-determination theory. *Handbook of theories of social psychology*, 1, 416-433.
- Sapolsky, R. M. (1996). Stress, glucocorticoids, and damage to the nervous system: the current state of confusion. *Stress: The International Journal on the Biology of Stress*, 1(1), 1-19.
- Schnurr, P. P., & Green, B. L. (2004). *Trauma and health: Physical health consequences of exposure to extreme stress*. Washington, DC: American Psychological Association.
- Schwarzer, R., Schulz, U., & Berlin, F. U. (2001). *The role of stressful life events*. Available <http://userpage.fuberlin.de/~health/materials/lifeevents.pdf>
- Selye H (1974). *Stress without distress*. New York: Signet.
- Selye, H. (1956). *The stress of life*. New York: McGraw-Hill.
- Seyle, D. C., Tan, E., Widyatmoko, C. S., Lam, S., & Silver, R. C. (2010). *The psychological impact of repeated exposure to natural disasters: A study of residents of Java, Indonesia*. Paper presented at the annual meeting of the International Society for Traumatic Stress Studies, Montreal, Canada.
- Seyle, D. C., Widyatmoko, C. S., & Silver, R. C. (2013). Coping with natural disasters in Yogyakarta, Indonesia: A study of elementary school teachers. *School Psychology International*, 32(5). 484-497.
- Siegle, D. (2002) *Trustworthiness*. Available at
<http://www.gifted.uconn.edu/siegle/research/qualitative/trust.htm>
- Shannon, M. P., Lonigan, C. J., Finch, A. J., & Taylor, C. M. (1994). Children exposed to disaster: I. Epidemiology of post-traumatic symptoms and symptom profiles. *Journal of the American Academy of Child & Adolescent Psychiatry*, 33(1), 80-93.
- Shirlaw, N. (2014). *Children and the Canterbury earthquakes*. Available at
<http://www.cpag.org.nz/assets/Backgrounders/140227%20CPAG%20Children%20and%20the%20Canterbury%20Feb2014.pdf>

- Simons, J. S., Gaher, R. M., Jacobs, G. A., Meyer, D., & Johnson-Jimenez, E. (2005). Associations between alcohol use and PTSD symptoms among American Red Cross disaster relief workers responding to the 9/11/2001 attacks. *The American Journal of Drug and Alcohol Abuse*, 31(2), 285-304.
- Skinner, E. A. (1996). A guide to constructs of control. *Journal of Personality and Social Psychology*, 71(3), 549.
- Skinner, E., & Edge, K. (2002). Self-determination, coping, and development. In E. L. Deci & R. M. Ryan (Eds.) *Handbook of self-determination research* (pp.297–337). Rochester, NY: University of Rochester Press
- Smith, A. & Lazarus, S. (1990). Emotion and adaptation. In L.A. Pervin (Ed.). *Handbook of personality: Theory and research* (pp. 609-637). New York: Guilford.
- Smith, M., & Segal, J. (2012). *Coping with traumatic stress: Emotional recovery after a disaster*. Available at:
http://www.helpguide.org/mental/disaster_recovery_trauma_stress_coping.htm.
- Smith, R. et al (2004) Mental health status of world trade center rescue and recovery workers and volunteers. *Morbidity and Mortality Weekly Report*, 53 (35), 812–815.
- Soenens, B., Vansteenkiste, M., Lens, W., Luyckx, K., Goossens, L., Beyers, W., & Ryan, R. M. (2007). Conceptualizing parental autonomy support: Adolescent perceptions of promotion of independence versus promotion of volitional functioning. *Developmental Psychology*, 43(3), 633-646.
- Stajkovic, A. D., & Luthans, F. (1998). Self-efficacy and work-related performance: A meta-analysis. *Psychological Bulletin*, 124(2), 240-261.
- Stanley, I (2012). *Primary school teacher job description*. Available at
http://www.prospects.ac.uk/primary_school_teacher_job_description.htm
- Statistics New Zealand (2013). *The 2013 census*. Available at
<http://www.stats.govt.nz/Census/2013-census.aspx>.
- Sturt, G. (2009). *Measuring stress*. Available at
<http://homepage.ntlworld.com/gary.sturt/health/stremeas.htm>
- Suedfeld, P., (1997). Reactions to societal trauma: Distress and/or eustress. *Political Psychology*, 18(4), 849-861.
- Tamres, L., Janicki, D., & Helgeson, V.S. (2002). Sex differences in coping behavior: A meta-analytic review. *Personality and Social Psychology Review*, 6(1), 2–30.
- Taylor, S.E., Klein, L.C., Lewis, B.P., Gruenewald, T.L., Gurung, R.A.R., & Updegraff, J.A. (2000). Biobehavioral responses to stress in females: Tend-and-befriend, not fight-or-flight. *Psychological Review*, 107(3), 411–429.

- Thienkrua, W., Cardozo, B. L., Chakkraband, M. S., Guadamuz, T. E., Pengjuntr, W., Tantipiwatanaskul, P. & Van Griensven, F. (2006). Symptoms of posttraumatic stress disorder and depression among children in tsunami-affected areas in southern Thailand. *The Journal of the American Medical Association*, 296(5), 549-559.
- Tiefenbach, T., & Kohlbacher, F. (2013). *Disentangling the Happiness Effects of Natural Disasters: The Mediating Role of Prosocial Behavior* (No. 1305). German Institute for Japanese Studies (DIJ), Business & Economics Section
- Troman, G. (2000). Teacher stress in the low-trust society. *British Journal of Sociology of Education*, 21(3), 331-353.
- van den Broeck, A., Vansteenkiste, M., de Witte, H., Lens, W., & Soenens., B. (2010). Capturing autonomy, relatedness and competence at work: Construction and validation of a work-related basic need satisfaction scale. *Journal of Occupational and Organizational Psychology*, 83(4), 981–1002.
- Van Der Linde, C. (2000). The teacher's stress and its implications for the school as an organization: How can TQM help? *Education Indianapolis* 121(2), 375-382.
- Vroom, V. H., & Deci, E. L. (1992). *Management and motivation: Selected readings* (2nd ed.). New York, NY: Penguin Books.
- Wang, C., Wei, S., Xiang, H., Xu, Y., Han, S., Mkangara, O. B., & Nie, S. (2008). Evaluating the effectiveness of an emergency preparedness training programme for public health staff in China. *Public Health*, 122(5), 471-477.
- Weems, C. F., Taylor, L. K., Cannon, M. F., Marino, R. C., Romano, D. M., Scott, B. G., & Triplett, V. (2010). Post traumatic stress, context, and the lingering effects of the Hurricane Katrina disaster among ethnic minority youth. *Journal of Abnormal Child Psychology*, 38(1), 49-56.
- Weintraub, D., & Ruskin, P. E. (1999). Posttraumatic stress disorder in the elderly: a review. *Harvard Review of Psychiatry*, 7(3), 144-152.
- Weiten, W. & Lloyd, M.A. (2008) *Psychology applied to modern life*. Belmont, CA: Wadsworth Cengage Learning.
- Wen, J., Shi, Y-k., Li, Y-p., Yuan, P., Wang, F., (2012). Quality of life, physical diseases, and psychological impairment among survivors 3 years after Wenchuan earthquake: A population based survey. *PLoS ONE* 7(8): e43081. doi:10.1371/journal.pone.0043081
- Werner, E. E., & Smith, R. S. (1992). *Overcoming the odds: High risk children from birth to adulthood*. Cornell University Press. Chicago
- Williams, D. R. (2003). The health of men: Structured inequalities and opportunities. *American Journal of Public Health*, 93(5), 724–731.

- Williams, R., & Drury, J. (2009). Psychosocial resilience and its influence on managing mass emergencies and disasters. *Psychiatry*, 8(8), 293-296.
- Witness Justice (2011). *Post-traumatic stress disorder and acute stress disorder*. Available at <http://www.witnessjustice.org/health/ptsd.cfm>
- Wolin, S. J., & Wolin, S. (2010). *The resilient self: How survivors of troubled families rise above adversity*. NY: Villiard.
- Wu, Y. C., & Shih, K. Y. (2009). The effects of gender role on perceived job stress. *The Journal of Human Resource and Adult Learning*, 6(2), 74-79.
- Wulf, F. (1922). "Beitrage zur Psychologie der Gestalt: VI. Über die Veränderung von Vorstellungen (Gedächtniss und Gestalt)". *Psychologische Forschung* 1: 333–375.
- Xu, J., Zhang, Y., Chan, J., Li, N., Yang, Y., & Li, J. (2011). A comparison of the acute stress reactions between the Han and Tibetan ethnic groups in responding to devastating earthquakes. *International Journal of Psychiatry in Medicine*, 42(2), 167-80. Available at <http://search.proquest.com/docview/909829641?accountid=14782>
- Yang, M., Lee, E., Choi, J. W., & Kim, H. J. (2012). PTSD and related factors among dispatched firefighters to rescue sites after the great Japanese earthquake. *Korean Journal of Occupational and Environmental Medicine*, 24(2), 167-179.
- You, Y. H., Zhang, H., & Liu, X. (2009). Report of psycho trauma assessment of teachers in secondary and elementary school after Sichuan earthquake. *Advances in Psychological Science*, 3, 012.

APPENDICES

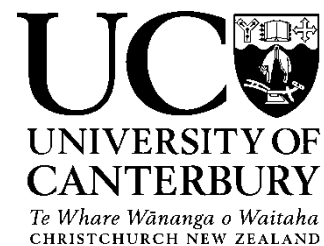
- I. Letter to Principals
- II. Letter to Teachers
- III. Teacher Consent
- IV. Teacher Questionnaire
- V. Ethical Approval

Telephone: +64 3 376 6193

Email: Allie.McDonald@xtra.co.nz

1st July 2013

Dear Principal



Perceived Impact of Earthquakes upon Teacher Performance

My name is Alexandra McDonald and I am a teacher at Redcliffs School. I am also currently a Masters Thesis student at the University of Canterbury and I am investigating how teachers perceive their teaching performance was impacted by the earthquakes of 2010 and 2011. This research will provide information about how teachers coped and their perceptions of the effects of the earthquakes on their performance as professionals and as set out in the criteria set by the Teachers Council.

I am seeking your permission to invite any teachers in your school who were in teaching positions on September 4 2010, February 22 2011, or June 13 2011 to participate. In order to invite your staff, I am seeking your permission to visit your school and explain the project to you and your staff. I would supply the written questionnaires to staff at that time, together with my contact details. Teachers may volunteer at the time or may contact me later. Teachers' participation will be totally anonymous. Their schools will not be identified or notified as to who is participating. As noted above, the focus of the research is on teachers' perceptions of their own teaching performance. Their participation is voluntary and teachers have the right to withdraw their permission at any stage with no penalty.

I have enclosed an Information Sheet for Teachers, which explains the project.

I am very happy to meet with you in person to explain the project, and answer any questions. I would be happy to come along to a staff meeting and explain the project to your staff, and hand out the information sheets.

My Supervisor is Dr. Veronica O'Toole from the School of Educational Studies and Leadership in the College of Education, (Email: veronica.otoole@canterbury.ac.nz, Phone: +64 3 364 2987 ext. 44138). You are more than welcome to contact Veronica if you have any questions.

This project has received ethical approval from the University of Canterbury Educational Research Human Ethics Committee. Participants should address any complaints to: The Chair, Educational Research Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

Please complete the consent form if you understand and agree to allow me to invite teachers from your school to take part in this research project. Please return this consent form to me via email as soon as is practicable.

Sincerely

Alexandra McDonald

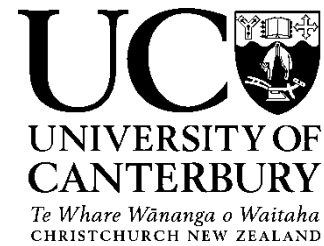
Telephone: +64 3 376 6193

Email: Allie.McDonald@xtra.co.nz

14 Muritai Tce

Mount Pleasant

Christchurch



1st July 2013

Perceived Impact of Earthquakes upon Teacher Performance

Information Sheet for Teachers

My name is Alexandra McDonald and I am a teacher at Redcliffs School. I am also currently a Masters Thesis student at the University of Canterbury and I am investigating how teachers perceive their teaching performance was impacted by the earthquakes of 2010 and 2011. This research will provide information about how teachers coped and how schools might best support teachers after traumatic incidents such as natural disasters.

I invite those teachers who were in teaching positions on September 4 2010, February 22 2011 and June 13 2011 to participate. This will involve a written questionnaire (15 minutes approximately) and an **optional** follow up focus group (45 minutes approximately). The optional focus groups will involve deeper discussion of how your teaching performance was impacted by the earthquakes. There will be group questions for discussion about your teaching performance drawing on the questionnaire topics, and you will be asked to complete a 22 question Impact of Events Scale questionnaire.

Participation is voluntary and you have the right to withdraw at any stage with no penalty. If you do participate, you have the right to withdraw from the study at any time without penalty. If you withdraw, I will do my best to remove any information relating to you, provided this is practically achievable.

Your privacy will be guaranteed and your identity protected. After collection, your name and school information will be replaced with a code for data analysis purposes. **If you volunteer to participate in the focus groups this will compromise your anonymity.** However, those who provide their email address for a follow up focus group will have their email, name and school stored electronically only for the purpose of arranging the follow up focus group. This will be in a password protected file. Focus groups will be recorded in order to be transcribed and analysed. During the focus groups first names will only be used and then given an alias. Transcription will be completed only by myself. All questionnaires, personal details and audio recordings will be destroyed 5 years after the study is completed. Neither participants nor schools will be identified in the thesis or any published materials.

Recalling events surrounding the earthquakes of 2010 and 2011 may be upsetting. If you find the process distressing there are people you can talk to. The Quake Support and Counselling Services Helpline 0800 777 846 can offer practical support, information or advice on quake related issues, including counselling. Victim Support offers a free counselling support service 0800 VICTIM (842 846).

Data will be used specifically for the purposes of this study including a Masters Thesis and any related publications or presentations that may follow. The finished thesis will be available from the University of

East Side Story: The Perceived Impacts of the Canterbury Earthquakes on Teacher Performance.

Canterbury Library. All participating schools will receive a summary of the research findings upon completion of the research.

Participants may contact me with any questions about the study at any stage on the contact details above. Additionally, participants may contact my supervising lecturers Veronica O'Toole (Email: veronica.otoole@canterbury.ac.nz, Phone: +64 3 364 2987 ext. 44138) and Neville Blampied (Email: neville.blampied@canterbury.ac.nz, Phone: +64 3 364 2199) if they have any concerns.

This project has received ethical approval from the University of Canterbury Educational Research Human Ethics Committee. Participants should address any complaints to: The Chair, Educational Research Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

Please complete the consent form if you understand and agree to take part in the questionnaire or focus group. Please return this consent form and your completed questionnaire in the sealed envelope provided to 14 Muritai Tce, Mount Pleasant, Christchurch 8081.

Sincerely

Alexandra McDonald

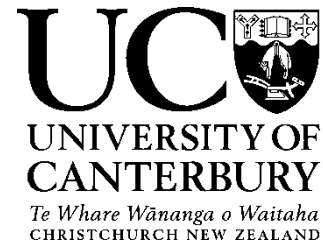
East Side Story: The Perceived Impacts of the Canterbury Earthquakes on Teacher Performance.

Email: Allie.Mcdonald@xtra.co.nz

14 Muritai Tce

Mount Pleasant

Christchurch 8081



Perceived Impact of Earthquakes upon Teaching Performance.

Consent Form for Teachers (Participants)

A full explanation of this project has been provided and I have been given an opportunity to ask questions.

I understand what is required of me if I agree to take part in the research.

I understand that participation is voluntary and I may withdraw at any stage without penalty.

I understand that any information or opinions provided will be kept confidential to the researcher and that any published or reported results will not identify me or my teaching staff.

I understand that all data collected for the study will be kept in password protected electronic form and will be destroyed after five years.

I have been given the contact details for Quake Support should I wish to contact them.

I understand that I am able to access a report on the findings of the study.

I understand that I can contact the researcher for further information.

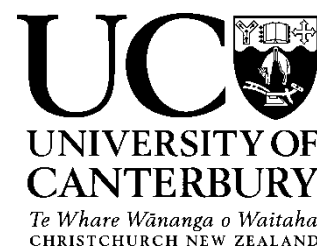
I understand I can contact the Chair, University of Canterbury Educational Research Human Ethics Committee, if I have any complaints.

Participant (Name):

Date:

Signed:

Please return this consent with your completed questionnaire in the sealed envelope provided to the above postal address.



Perceived Impact of Earthquakes on Teacher Performance Questionnaire.

Thank you for volunteering to participate in this research.

This study will gather information about how teachers perceive the earthquakes of 2010 and 2011 impacted upon their teaching performance.

“Earthquakes” refers to all earthquakes and aftershocks felt throughout the Canterbury region after September 4, 2010.

Please complete the attached self-evaluative questionnaire outlining how you feel your performance was impacted. Your answers are confidential and will only be seen by the researcher. The performance measures have been adapted from the New Zealand Teachers Council criteria for fully registered teachers. If you believe there are other aspects of your teaching performance that were impacted please include these on the final page.

The impacts upon your teaching performance may or may not be a direct result of the earthquakes. Therefore, if you believe the performance measure was impacted upon, and this otherwise would not have occurred without the earthquakes, please include and consider to what extent it was effected.

Impacts upon performance as a result of the earthquakes may be positive or negative. Please indicate by circling to what extent the earthquakes impacted upon the teacher performance measure. Then if necessary briefly elaborate (1-2 sentences) in the box provided.

For explanations of the teaching performance measures please see attached definition of terms.

If you would be interested in participating in a follow up focus group to be held at your school, please complete the name, email and school section of the first page.

Once you have completed the questionnaire please place it in the envelope provided and return via post.

Thank you for your participation.

Perceived Impact of Earthquakes on Teacher Performance Questionnaire:

Demographic Information

Age: (Please circle)

<25 26-35 36-45 46-55 56-65 65+

Gender: (Please circle)

Male Female

Ethnicity: (Please circle)

Pakeha Maori Pasifika Asian Other

How many years have you been a fully registered teacher? _____

Location during major (September 4th, February 22nd, June 13th) earthquakes:

Please only complete this section ONLY if you wish to be contacted to participate in a follow up focus group. These will be short (<30 mins) small group meetings held at individual schools.

Name:

Email address:

School:

Please indicate by circling: 1=Significant negative impact 2=Mild negative impact 3=No positive or negative impact 4=Mild positive impact 5=Significant positive impact					A: Teaching Performance: <i>Professional relationships and professional values</i>
1	2	3	4	5	A1: The earthquakes impacted upon my professional relationships with learners. Elaboration:
1	2	3	4	5	A2: The earthquakes impacted upon my professional relationships with colleagues. Elaboration:
1	2	3	4	5	A3: The earthquakes impacted upon my professional relationships with learners whanau. Elaboration:
1	2	3	4	5	A4: The earthquakes impacted upon my professional relationships within the wider school community. Elaboration:
1	2	3	4	5	A5: The earthquakes impacted upon my providing a safe (physical, social, emotional) learning environment. Elaboration:
1	2	3	4	5	A6: The earthquakes impacted upon my providing a culturally sensitive learning environment. Elaboration:
1	2	3	4	5	A7: The earthquakes impacted upon my commitment to the bi-cultural partnership of Aotearoa New Zealand. Elaboration:
1	2	3	4	5	A8: The earthquakes impacted upon my participation in professional development. Elaboration:
1	2	3	4	5	A9: The earthquakes impacted upon my contribution to the professional learning community. Elaboration:
1	2	3	4	5	A10: The earthquakes impacted upon my ability to undertake areas of responsibility effectively. Elaboration:

Please indicate by circling: 1=Significant negative impact 2=Mild negative impact 3=No positive or negative impact 4=Mild positive impact 5=Significant positive impact					B: Teaching Performance: <i>Professional knowledge in practice</i>
1	2	3	4	5	B1: The earthquakes impacted upon my conceptualising appropriate learning activities. Elaboration:
1	2	3	4	5	B2: The earthquakes impacted upon my planning of appropriate learning activities. Elaboration:
1	2	3	4	5	B3: The earthquakes impacted upon my implementation of appropriate learning activities. Elaboration:
1	2	3	4	5	B4: The earthquakes impacted upon my providing a collaborative, supportive, motivating learning environment for learners. Elaboration:
1	2	3	4	5	B5: The earthquakes impacted upon my application of knowledge, about how learners learn, to practice. Elaboration:
1	2	3	4	5	B6: The earthquakes impacted upon my modifying teaching approaches to meet the needs of individual learners. Elaboration:
1	2	3	4	5	B7: The earthquakes impacted upon my integrating Te Reo into the classroom programme. Elaboration:
1	2	3	4	5	B8: The earthquakes impacted upon my creation of assessment tasks and the gathering of assessment data. Elaboration:
1	2	3	4	5	B9: The earthquakes impacted upon my analysis and use of assessment data. Elaboration:
1	2	3	4	5	B10: The earthquakes impacted upon my ability to problem solve and critically analyse my practice. Elaboration:

Definition of Terms
A1, A2, A3, A4: Professional relationships with learners/colleagues/ whanau/community: Engage in ethical, respectful, positive and collaborative professional relationships with: Learners, teaching colleagues, support staff and other professionals, whānau and other carers of learners, agencies, groups and individuals in the community.
A5: Providing a safe (physical, social, emotional) learning environment: Take all reasonable steps to ensure the environment is physically, socially and emotionally safe for learners.
A6: Providing a culturally sensitive learning environment: Acknowledge and respect the languages, heritages and cultures of all learners.
A7: Commitment to the bi-cultural partnership of Aotearoa New Zealand. Demonstrate respect for the heritages, languages and cultures of both partners to the Treaty of Waitangi.
A8: Participation in professional development: Participate in learning opportunities to advance personal professional knowledge and skills.
A9: Contribution to the professional learning community. Actively contribute to the professional learning community by collaborating and cooperating with other professionals.
A10: Undertake areas of responsibility effectively. Complete all duties required of the position, including, but not limited to; management of resources, finances, organisation of events and provision of professional opportunities for colleagues.

B1, B2, B3: Conceptualising/planning/implementing appropriate learning activities. Articulate clearly the aims of teaching, give sound professional reasons for adopting aims, and implement them into practice. Through planning and teaching, demonstrate knowledge and understanding of relevant content, disciplines and curriculum documents.
B4: Providing a collaborative, supportive, motivating learning environment for learners: Demonstrate effective management of the learning setting which incorporates successful strategies to engage and motivate learners. Foster trust, respect and cooperation with and among learners.
B5: Application of knowledge, about how students learn, to practice: Enable learners to make connections between their prior experiences and learning and their current learning activities. Provide opportunities and support for learners to engage with, practise and apply new learning to different contexts. Encourage learners to take responsibility for their own learning and behaviour. Assist learners to think critically about information and ideas and to reflect on their learning.
B6: Modifying teaching approaches to meet the needs of individual students: Select teaching approaches, resources, technologies and learning and assessment activities that are inclusive and effective for diverse learners. Modify teaching approaches to address the needs of individuals and groups of learners.
B7: Integrating Te Reo into the classroom programme: Integrate the teaching and use of Te Reo Maori into the everyday classroom programme.
B8: Creation of assessment tasks and the gathering of assessment data: Create or select relevant and appropriate assessment tasks. Gather assessment data in a timely manner.
B9: Analysis and use of assessment data: Analyse assessment information to identify progress and on-going learning needs of learners. Use assessment information to give regular and on-going feedback to guide and support further learning. Analyse assessment information to reflect on and evaluate the effectiveness of the teaching. Communicate assessment and achievement information to relevant members of the learning community. Foster involvement of whanau in the collection and use of information about the achievement of learners.
B10: Ability to problem solve and critically analyse my practice: Systematically and critically engage with evidence and professional literature to reflect on and refine practice. Respond professionally to feedback from members of the learning community. Critically examine own beliefs, including cultural beliefs, and how they impact on professional practice and the achievement of learners.



HUMAN ETHICS COMMITTEE

Secretary, Lynda Griffioen
Email: human-ethics@canterbury.ac.nz

Ref: 2013/32/ERHEC

24 June 2013

Alexandra McDonald
College of Arts
UNIVERSITY OF CANTERBURY

Dear Alexandra

Thank you for providing the revised documents in support of your application to the Educational Research Human Ethics Committee. I am very pleased to inform you that your research proposal "Perceived impact of Canterbury earthquakes on teacher performance" has been granted ethical approval.

Please note that this approval is subject to the incorporation of the amendments you have provided in your email of 24 June 2013.

Should circumstances relevant to this current application change you are required to reapply for ethical approval.

If you have any questions regarding this approval, please let me know.

We wish you well for your research.

Yours sincerely

A handwritten signature in black ink, appearing to read 'N Surtees'.

Nicola Surtees
Chair
Educational Research Human Ethics Committee

"Please note that Ethical Approval and/or Clearance relates only to the ethical elements of the relationship between the researcher, research participants and other stakeholders. The granting of approval or clearance by the Ethical Clearance Committee should not be interpreted as comment on the methodology, legality, value or any other matters relating to this research."

E S

